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AMERICAN DYESTUFF REPORTER

DEVOTED TO TEXTILE WET-PROCESSING

Annual Processing Review Number

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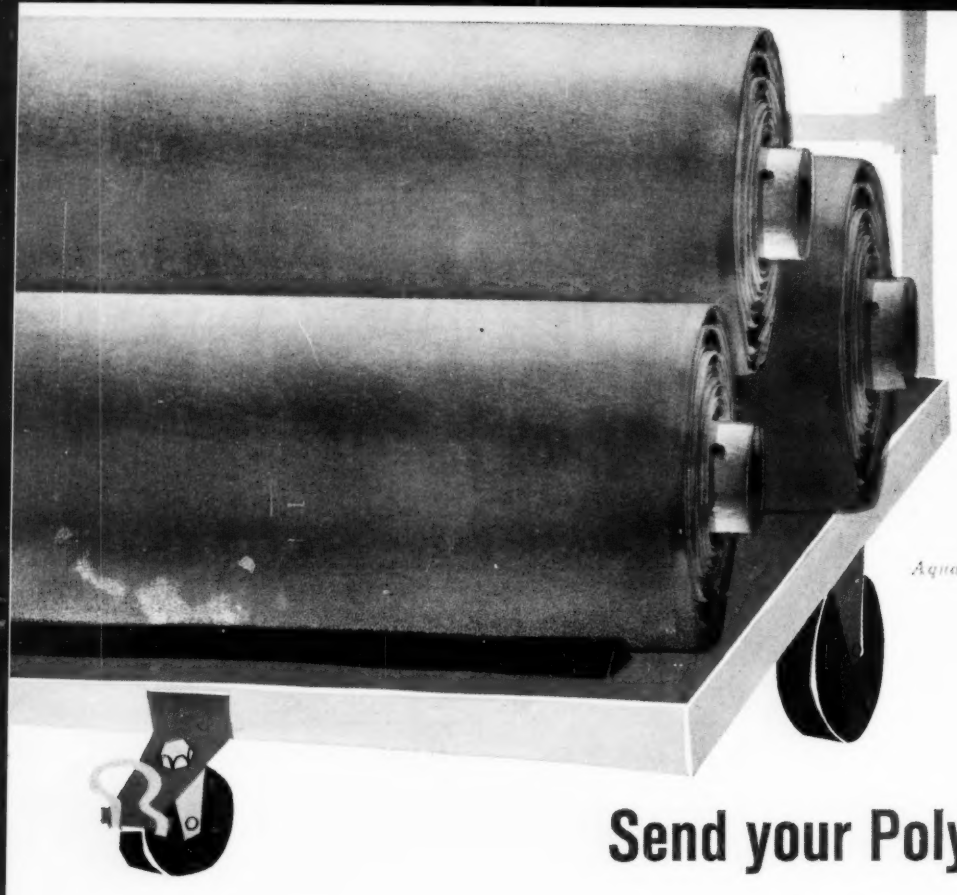

Send your Polyester Fabrics

to market protected by the

Outstanding Fastness of Eastman Polyester Dyes

Your Eastman representative will be glad to tell you about the performance advantages and economy of these dyes

Light shades, dark shades—as the demand for fabrics containing polyester fibers continues to grow, dyers are being called upon to deliver more shades, brighter shades, faster shades.

In step with this trend, Eastman offers an expanding series of polyester dyes, providing the best all 'round fastness characteristics of polyester dyes currently available.

Specifically developed for use with polyester fibers, these dyes exhibit outstanding fastness to washing, light, sublimation, crocking, perspiration, dry cleaning and wet pressing.

Equally important are their excellent processing characteristics...good build-up, good exhaustion and outstanding leveling properties.

Dyeing with Eastman Polyester Dyes is easily accomplished with carriers or under pressure at elevated temperatures. Fibers can be readily dyed as tow, tops, stock, or fabric. Fabrics of polyester filament can be conveniently dyed in jigs. Fabrics woven of spun polyester yarns alone or blended with cotton, viscose or wool can be easily dyed in dye-becks.

Get the full story of this outstanding line of dyes for polyester fabrics from your Eastman representative. Formulations and technical assistance on dyeing procedures are readily available.

Eastman Polyester Dyes

Eastman Polyester Dyes are sold in the United States by **EASTMAN CHEMICAL PRODUCTS, INC.**, subsidiary of EASTMAN KODAK COMPANY, in Kingsport, Tennessee; Lodi, New Jersey; and Greensboro, North Carolina. On the **West Coast** through WILSON & GEO. MEYER & COMPANY, San Francisco, Los Angeles, Portland, Seattle, Salt Lake City. In **Canada** through CLOUGH DYESTUFF CO., LTD., St. Laurent, P. Q.

*Try this formula on your next lot of aqua.

0.15% Eastman Polyester Yellow W
0.2% Eastman Polyester Blue GLF
3 g./l. o-phenyl phenol type carrier
Material: Polyester
Bath Ratio: 30:1
Dyed 1 hour at boil

Polyester Yellow 5GLS
Polyester Yellow RL
Polyester Yellow W
Polyester Yellow 5R
Polyester Red B
Polyester Red 2G
Polyester Dark Red FL
Polyester Pink RL
Polyester Pink LB
Polyester Brilliant Orange 2RL
Polyester Blue GLF
Polyester Blue GR
Polyester Brilliant Blue 2RL
Polyester Blue 3RL
Polyester Blue BLF
Polyester Blue GB
Polyester Navy G
Polyester Violet R
Polyester Brown 3RL
Polyester Black RB
Polyester Diazo Black B

Annual Processing Review Number

AMERICAN

DYESTUFF REPORTER

Volume 49 December 12, 1960 No. 25

Alphabetical List of NEW PRODUCTS

Developed Since November, 1959

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WITH the cooperation of manufacturers of dyestuffs, textile chemicals, and wet processing and laboratory equipment, we have prepared the accompanying list of products which, it is understood, have been placed on the market or further developed since November, 1959. The list of products has been subdivided according to the classifications mentioned. Suppliers are listed in alphabetical order.

We have tried to make this list as complete and accurate as possible, but there may be some unintentional omissions or errors. If so, we shall be pleased to have such matters brought to our attention immediately. We have depended upon the manufacturers to supply us with a complete list of their new products together with information concerning them. The properties claimed for these products are those claimed by the manufacturers. The information which we publish is necessarily in a brief form inasmuch as lack of space prohibits the publication of complete details concerning any product. We hope, however, that the information as it appears is sufficiently comprehensive to give the reader a specific idea of the properties and intended uses of the product.

TEXTILE CHEMICALS

ALTHOUSE CHEMICAL CO
Reading, Pa

Cenekol* NCS
A new substantive product that can be added directly to the dyebath and is said to increase greatly the fastness to washing of neutral acid and acid dyes on nylon. It may be applied in the dyebath near the end of the dyeing cycle or it may be used as an aftertreatment. In either case, shading additions may be made if desired.

* * *

AMALGAMATED CHEMICAL CORP
Ontario & Rorer Streets
Philadelphia 34, Pa

Dynesol Powder D
A retarding and leveling agent for use in dyeing with premetallized colors.

Dynesol T-35A
An anionic wetting and dispersing agent for use with dispersed colors. It is said to improve dispersion of color, prevent lake formation, and eliminate tarring.

Evenate OR
A quaternary dyeing assistant for use with basic colors in dyeing Orlon. It is said to offer good retarding action and even dyeing.

PEN #2
An emulsion of polyethylene with nonionic emulsification system. The product is said to be extremely stable and to possess very fine particle size.

*Registered tradename

Unawhites
A series of whiteners for all synthetic fibers. Can be used on whites or for brightening fabrics to be dyed in pastel shades. Eliminates the use of bleaching agents.

* * *

AMERICAN CYANAMID CO
ORGANIC CHEMICALS DIV
Textile Chemicals Dept
Bound Brook, NJ

Aerotex* Accelerator No. 7
A newly developed metallic salt accelerator especially designed to minimize the shade change which occurs when vat-dyed fabrics are treated with resin formulations containing conventional zinc nitrate accelerators.

Aerotex* Resin 44
A modified triazine blend supplied as a clear, water-white liquid which may easily be pumped. It is said to provide durable, high wrinkle recovery with minimum tensile strength losses, together with excellent resistance to chlorine retention and to yellowing of white on chlorine bleaching at an economical cost. It is stated that it will provide such desirable properties as durable mechanical finishes, shrinkage control of knits, dimensional stabilization of rayons and improved durability of water-repellent finishes. By varying resin solids, accelerator concentration and curing conditions, a combination of the above-mentioned properties may be obtained to best meet a variety of needs.

*Registered trademark

Aerotex* Resin 50
A modified urea-formaldehyde condensate in liquid form. When applied alone or in combination with other resins to fabrics of cotton, rayon or blends, it is said to impart excellent durable wrinkle recovery, shrinkage control and other desirable properties including a soft hand. Its chlorine-retention properties are the same as those of other urea formaldehyde resins.

Aerotex* Resin 161
This product is a water-dispersible thermoplastic resin emulsion, anionic in nature. It is useful as a partial or complete starch replacement for the building of a semidurable body and stiffness when used alone. It may also be used to modify the hand of fabrics treated with thermosetting resins. This product is said to be more tolerant to various pad-bath additives than other thermoplastic resins of this type.

Aerotex* Resin DM
This newly developed urea-formaldehyde resin is said to impart improved shrinkage control to cellulosic fabrics. It is supplied in the form of a soft pourable paste which is more easily handled than other UF pastes or creams. It is especially suited for Cyana® shrinkage control and "wash-and-wear" finishes on rayon fabrics or cotton knits, producing a hand with some firmness and fullness as well as affording durable wrinkle recovery.

*Registered trademark

Aerotex* Resin P-220
This product is a butylated, thermosetting urea-formaldehyde resin in a mixture of solvents. It is recommended by the manufacturers for use as a component of water-in-oil emulsion printing systems, acting as a pigment binder and aiding in scrub resistance.

Calco Leveling Salt LV
A dyeing assistant for neutral-dyeing metallized dyes which is said to produce level dyeings with this class of dyes under normal acid-dyeing conditions.

Calcogene Dyeing Assistant
A reducing agent for sulfur dyes which is said to eliminate bronziness due to premature oxidation.

Cyanalube® Softener R
This is a low-cost polyethylene softener developed for application to textile fabrics composed of natural and synthetic fibers as well as blends. It is said to impart softness, and improve abrasion resistance, tear strength and sewing qualities of resin-treated or harsh goods. The finishes contained in the product are fairly durable to repeated drycleanings and have good durability to laundering.

Cyanatex Dyeing Assistant EM
A superior carrier for dyeing polyester, triacetate and acetate fibers. It is stated that it produces level dyeings over a broad range of dyeing conditions without effect on light fastness and is easily removed from the fiber.

Cyanatex® Softener CP
An economical, concentrated softener with adequate compatibility for pure finishing of fabrics or in resin-catalyst stability in high-temperture starch mixes. It is stated that it will resist yellowing and discoloration by heat and will enhance wrinkle recovery of resin-treated fabrics with little effect on tensile strength. This product is said to provide excellent softness in sewing properties in pure or resin finishes.

Cyanatex® Softener SB Conc
This product is a concentrated soft anionic paste which is said to provide unusual softness at low concentrations on both cellulosic and synthetic fabrics. This high solids product offers the advantage of requiring less storage facilities. It is especially recommended by the manufacturers as a top softener on resin-treated fabrics. It may also be used as a pure finish or as a pad-bath additive with resin formulations under certain conditions.

Deceresol® Surfactant L
A low-foaming anionic wetting agent of the ester sulfonate type. It is designed to provide the rapid wetting characteristic of these surface-active agents without their excessive foaming under violent agitation. Foam dissipation is said to be extremely rapid with this product.

* * *

APEX CHEMICAL CO, INC
200 S First St
Elizabethport, NJ

Apexomide #7
A pure white liquid nonionic softener; soluble in cold water. It is said to impart a very soft, smooth hand on cottons and synthetics. Is used together with resin mixes or as a top softener. Easy to work with, stable under all storage conditions and nonchlorine retentive.

Apexscour #233
A protein-based liquid graphite remover for nylon lace.

Apexscour #300
A nonionic-anionic liquid wool scour, especially buffered for use on woolen goods to scour properly and leave them in a desirable condition.

Dysyn #78
A concentrated paste carrier for obtaining maximum color with dark shades on Dacron. Will not break out or spot in the bath.

Dysyn #750
A concentrated paste carrier of especial value in the dyeing of Dynel. It is said to improve color value and to have an excellent action on the fiber itself. An emulsifiable blend of nonchlorinated aromatic compounds.

Flameproof #370
A liquid flameproofing agent especially for use on plush and other constructions where a soft hand and lack of crystallization is required.

Lubrapex #100
A winding lubricant for use on cotton and synthetic yarns in the knitting and throwing industries. It is said to give good antistatic properties and can be used as an all-around-type product.

Pentrapex #100
A highly sulfated anionic complex used in the dyeing of acetate fabrics to eliminate chafes and cracks. It is said to have leveling and penetrating properties and to keep goods submerged to prevent curling.

Pentrapex #200
An anionic-nonionic wetting agent and scour for use in box work on blends, cottons and plush pile fabrics. It is said to be stable in the dyebath on the acid side in the presence of high salt concentrations and to be very effective for wetting out in the kier.

* * *

ARKANSAS CO, INC
P O Box 210
Newark 1, NJ

Dyasist #230
Dyasist #230 is claimed to be a powerful and efficient retarding agent for dyeing 100% Orlon, using cationic dyes. It is said to produce exceptionally uniform and level dyeings due to its continuing retarding effect throughout the dyeing cycle. It is further said to be particularly efficient for dyeing light and pastel shades. For optimum results, the goods should be prescoured with a nonionic detergent followed by thorough rinsing. In consistency, Dyasist #230 is a liquid product which is readily soluble in water. It is cationic in nature and slightly acid in reaction.

Dyasist #281
Dyasist #281 is claimed to be a highly efficient dyebath assistant for use in dyeing nylon tricot and other nylon filament fabrics, which eliminates or minimizes the barré marks which often occur in dyeing these materials. Its use is recommended by the manufacturer particularly with certain selected acid colors, a list of which will be furnished on request. When used in accordance with recommendations, Dyasist #281 does not affect adversely the lightfastness properties of the dyed material when exposed for 40 hours in the Fade-Ometer. For optimum results, it is recommended that the dyebath should be adjusted with formic acid to a pH of 3.0 to 3.5. Also, it is desirable to prescour the nylon fabrics before dyeing with a nonionic detergent followed by thorough rinsing. In consistency, Dyasist #281 is a viscous liquid which is readily soluble in water at all temperatures, to form a clear solution. Chemically, it is a modified cationic compound, and is slightly acid in reaction.

Fi-Retard® NBX
Fi-Retard NBX is claimed to be a superior flame retardant which was developed primarily for application to nylon fabrics. It is also effective on linen and nylon blends. Fi-Retard NBX has been approved for interior use by the City of New York Board of Standards and Appeals, and has been given Calendar No. 716-60SA. In addition to its excellent flame-retardant properties, it also reduces the afterglow to a minimum. It also is said to impart a full, soft hand to the treated fabric, thereby eliminating the objectionable boardiness characteristic of many flame retardants. In consistency, Fi-Retard NBX is a white crystalline powder, which is readily soluble in water even at high concentrations. It is anionic in nature, and slightly acid in reaction. For optimum results, Fi-Retard NBX should be applied on a padder or quetsch at room temperature, and high concentrations in the range of 35% to 50% are usually required for 100% nylon fabrics. For linen and nylon blends, this amount may usually be reduced to a range of 20% to 35%. In the case of heavy fabrics where penetration is difficult, it is desirable to add an anionic wetting agent such as Arkolene GN to the bath to accomplish uniform penetration. The processed fabric is preferably dried at 240° to 260°F; higher temperatures should be avoided. The flame-retardant properties of fabrics treated with Fi-Retard NBX are durable to multiple drycleanings, using straight solvents such as perchloroethylene or Stoddard Solvent, but are not durable to wet processing.

Hydro-Pruf® C
Hydro-Pruf C is an improved durable silicone water repellent, particularly for application to cotton and cotton blends where cotton is the major fiber. The outstanding property of Hydro-Pruf C, when properly applied to cotton goods, is said to be its excellent durability to high-temperature laundering. It may be used with thermosetting resins such as those commonly utilized to produce "wash-and-wear" cottons, and when used in such formulations, definite improvement in tear strength, abrasion resistance and sewability is said to be obtained. When used by itself, Hydro-Pruf C produces a soft, smooth, nongreasy hand. Hydro-Pruf C requires the use of a special catalyst, Catalyst G, which is included with the purchase of Hydro-

*Registered trademark

Pruf C in the correct ratio for use. Also, an additional catalyst, Catalyst A, must be used in the system when Hydro-Pruf C is used alone. On the other hand, when Hydro-Pruf C is used with a "wash-and-wear" resin, Catalyst A is not required in cases where a metal salt type of resin catalyst is used. In most applications, 6% to 8% of Hydro-Pruf C, together with Catalyst A at a 1:10 ratio and Catalyst G at 1:40 ratio, is required for satisfactory durable water repellency. Curing at 350°-360°F for 1.5 to 2 minutes after normal drying is required for optimum results. Hydro-Pruf C is a stable white emulsion, which is said to have excellent storage life under normal atmospheric conditions.

Nilofoam #60

Nilofoam # 60 is an improved silicone defoamer, which is said to have exceptional stability under severe conditions of use. It is stable at high temperatures, and it is particularly adaptable for use in pressure machines. Nilofoam #60 has an extremely stable emulsifying system, which does not break, even at the boil. It is also resistant to caustic soda and hydrosulfite as used in stripping operations. It is claimed that Nilofoam #60 is advantageous in that extremely small amounts are effective in minimizing or eliminating foam. It may be added to the bath at the beginning of the operation to prevent the formation of foam, or it may be added in small amounts as needed after foam has developed on the bath. In most cases, the use of a maximum of 0.1% on the bath volume is sufficient to keep foam under control. Nilofoam #60 is a viscous, white emulsion, which is stable in storage under normal atmospheric conditions.

Resipon® ST

Resipon ST is an improved type of triazone resin for use on "wash-and-wear" cottons. It is said to impart excellent crush resistance and effective dimensional control to such fabrics when properly applied. It is further said to have excellent resistance to chlorine damage together with minimum loss of tensile strength after multiple launderings. One of the outstanding features of Resipon ST is that little if any residual odor is left on treated goods. For most applications, concentrations of 12% to 15% plus 2% to 3% of Catalyst DA are sufficient to impart satisfactory "wash-and-wear" characteristics. As with all resins of this type, the goods should be dried in a relaxed condition and then cured at 300° to 310°F for 3 to 5 minutes. Although the residual odor caused by this resin is much less than most resins of the triazone type, it is good insurance to subject the goods to a mild alkaline rinse after the curing operation. Resipon ST is a particularly water-white liquid which has excellent storage life, and its high degree of fluidity permits easy pumping or gravity feed. This resin is compatible with most other textile resins and other additives commonly used in resin finishing.

* * *

ARNOLD, HOFFMAN & CO, INC
55 Canal St
Providence, RI

Ahcowet* AFB

A free-flowing liquid which assists in the production of level dyeings with basic dyestuffs on acrylic fibers. The presence of Ahcowet AFB is said to restrain the initial absorption of dyestuff by the fiber and thereby allow a much more rapid rise in dyebath temperature, consequently saving time. The restraining effect is not accompanied by a charge in final exhaustion. With certain dyestuffs, some shade change is produced when used with this agent, but no loss in light- or wetfastness has been observed.

Dispersol* CWL

A new level-dyeing assistant specifically designed for use in the application of Carbolan and other acid milling dyestuffs to wool. The use of 1.5-3.0% of Dispersol CWL in the dyebath is said to result in a very marked improvement in the level dyeing properties of Carbolan dyes on wool. This, combined with an improvement in compatibility of Carbolans when Dispersol CWL is used, enables combinations previously considered unsuitable, to be used with satisfaction. Further, the level dyeing improvement is such that the dyeing of certain types of goods—notably piece goods, hitherto considered impossible with acid milling dyes—can now be accomplished. Dispersol CWL only slightly depresses the final degree of exhaustion and is said to have no effect on the shade and fastness properties of the dyes. Dispersol CWL is a pale fawn, mobile liquid and is essentially nonionic.

Migration Inhibitor V**

An anionic polyelectrolyte which is said to inhibit or reduce the migration of color during the drying of piece goods previously padded with aqueous solutions or dispersions. It is particularly useful for incorporating in redispersible vat dispersions and solutions of Procion dyestuffs which are applied to cellulosic piece goods by a pad-dry-pad-steam process, and for low affinity direct colors applied by a pad-dry process. When dyeing fabrics containing synthetic fibers with vat and disperse dyestuffs in pigment form by pad-dry techniques, Migration Inhibitor V is said to be most suitable for minimizing color migration during the drying stage. It is stated that Migration Inhibitor V will reduce the bleeding of vat dyestuff into caustic/hydro solutions when dry, pigment-padded cloth is passed through. Superior quality dyeing with less end-to-end variation will consequently be achieved.

Perminal* PP

A water-soluble powder specifically recommended by the manufacturers to control resin migration in the Procion Resin process, and in the pigment padding of vat dyes. It is said to possess powerful wetting powers, and prevent aggregation of dye dispersions even when the padding bath is stored for several hours at high temperatures. Aqueous solutions of Perminal PP are substantially neutral. The product has good stability to hard water and is not adversely affected by the presence of small quantities of electrolytes.

Synthravon* 100-N

A nonionic paste softener and lubricant for application to cotton and synthetic yarns and fabrics. As a pure finish for fabric, as an additive to thermosetting resin formulations and starch finishes, for top-softening, or as a yarn lubricant, it is said to offer important advantages which aid in processing and contribute to the desirability of the finished yarn or fabric. It is claimed that Synthravon 100-N is outstanding in resistance to chlorine damage, compatibility characteristics, and scorch resistance.

* * *

ATLAS COLOR & CHEMICAL CO, INC
60 K St, King Terminal
South Boston 27, Mass

Atlafix L C

An aftertreatment for direct developed and union dyes, in aqueous form with catalyst added. Monomeric in nature it may be used as a weighting finish.

Atlascour M S P

A nonionic detergent with maximum soil-removal properties and fast rinsibility. May be used with common salt or polyphosphates as builders.

Atlasoft R-20

A cationic softener modified to give excellent solubility at low temperatures. It is said to produce a full, soft hand.

* * *

AUGUSTA CHEMICAL CO
P O Box 660
Augusta, Ga

Accoscour SK

Surface-active agent in aqueous solution. Used to provide cleaner, brighter shades and minimize crocking of naphthol dyeings.

* * *

BURKART-SCHIER CHEMICAL CO
Chattanooga, Tenn

Burkem 411

Felt wash for continuous cleaning of paper mill felts.

D-Mote

Penetrant-detergent to aid mote "explosion" and removal in alkaline scouring of cotton goods. Recommended by the manufacturers for kier boil as well as continuous boil off. Stable in 4% caustic.

Fibacon 77

Latest addition to Fibacon series of fiber and fabric finishes. It is said to impart a full soft hand with added weight. It is further said to be resistant to oxidation, discoloration and rancidity. Promising for use in backfill mixes.

KGS-420

Knit goods softener for hosiery, underwear. It is said to impart a full soft hand, to exhaust well from a long bath and to have excellent whiteness retention. No adverse effect on fluorescent brighteners.

Peem 398

Imroved polyethylene softener said to impart a superior hand without discoloration or yellowing. Nonionic, compatible with most resin-finishing components.

Polybond C-152

Resin formulation for stabilizing knit goods. Applied as either coating or saturator. It is said to provide control of

*Registered trademark

*Registered trademark
**Patent applied for

both stretch and shrinkage. Little effect on hand—can be controlled to impart finish desired. Applied with catalyst for maximum washing and drycleaning fastness.

Product 10

High concentration liquid alkyl aryl sulfonate—essentially 100% active. It is said to be a powerful detergent, wetting agent and water conditioner. Soluble in many aromatic solvents—extremely low concentrations render these solvents self-emulsifying. A versatile product moderately priced.

* * *

CARBIC-HOECHST CORP
Sheffield St
Mountainside, NJ

Remazol* Salt FD

A neutral product that is converted into alkali during steaming. It is said to give print paste stability of one month for Remazol dyes. Wide safety margin in the color shop as well as in storage and processing of prints or pad dyeings prior to steam fixation.

Remol* TRD
Remol* TRF

Carrier for disperse dyes for polyester fibers. Remol TRD is used for printing, Remol TRF for dyeing. Perfect dispersion of Remol TRF is said to insure speckless dyeings.

* * *

CHEMICAL PRODUCTS CORP
Lackawanna Ave
West Paterson, NJ

Chem Duller CT

A light shade duller, cationic in nature and nonfoaming. It is compatible with neutral and acidic materials over a range of pH 3 to 7, such as urea and melamine resins, vinyl, acrylic resins and weighters. It is stated that it contains resins to bind, and only the purest titanium; contains no lead, zinc, calcium, magnesium, silicon pigments, clays, nor bentonite. Imparts a smooth, full, drapehand. It is said to be particularly effective on nylon and other synthetic fibers.

Chemsol K-30

A universally useful synthetic concentrated detergent of sulfonated alcohols and nonionic condensates. It is said to be a highly efficient cleaning and scouring agent. It is claimed to be an excellent dispersing, emulsifying, and solubilizing agent for dyestuff and pigment, thereby producing uniform and level dyeing and printing. It is stated that it is exceptionally resistant and stable to hard water and is unaffected by acids, alkali, salts or electrolytes. It produces a copious and lasting lather. It is a leveling agent, penetrant with acid dyes, vats and direct colors.

"DBH" Durable Bacteriostatic Sanitizer

A new germicide which is said to provide long-lasting, bacteria-destroying properties. It is stated that it combats bacteria and microorganisms and thus eliminates danger of infection and perspiration odors. It is safe, nontoxic, colorless and is said to impart a high degree of permanency and fastness. It is claimed that "DBH"-treated cloth or fibers showed after ten or more washings and launderings at 135°F excellent bacteriostatic properties. It is said to provide mildew, mold resitance and decay protection to "DBH"-treated yarns, coating, sizes and films. Tests and certifications were performed by an independent bacteriological laboratory.

Proteen 20

A clear transparent almost water-white liquid, nonionic, of polymeric ethoxy fatty derivatives. It is an emulsifying wetting and dispersing agent compatible in acid or alkaline medium. It promotes leveling dyeing and permits deep penetrations with the fibers. It is said to be an excellent solvent for dyestuff and dispersing agent for pigment dyes. It is completely soluble in water and miscible with oils.

Pyrepel A T

An organic-inorganic composition with flameproofing and flame-retardant properties. It is said to prevent burning without any afterglow and without persistant smoldering. It leaves a soft full hand, no stiffness. It is specifically designed for flameproofing acetate fibers and also is successful on cotton, rayon and other synthetic fibers.

Resin 82R

A ribbon finish and sizing composition of pure alkyd resin. It is a noncuring, almost water-white resin concentrate. It is said to provide a full bodied, firm lustrous finish for satins, taffetas, acetates, rayons, silks, and nylons, in uses for blanket binding, and linings. Does not discolor and remains colorless. It is specifically designed to impart a flexible stiff hand with exceptional binding strength.

Resin YTA

A ribbon finisher and stiffener which is said to provide a dry, lustrous, firm, papery, parchment effect without mark-off. It is specifically designed for ribbon, satin, acetate, and rayon finishes. It may be used with water repellent in one operation. It is stated that it is established and proven as nonhydroscopic. The ribbon finish cuts cleanly with least fraying and slippage.

Velveteen D

A nonionic synthetic cream softener which is said to provide a smooth silky velvety finish with limpness. It possesses high resistance to yellowing and discoloration caused by heat or aging. It is stated that it is exceptionally compatible with nearly all anionic and cationic finishes as well as salts, weighters, resins and repellents. It has been successfully applied in package-, beam-, and yarn-dyeing equipment.

* * *

CIBA CO, INC
Chemical Specialties Division
Fair Lawn, NJ

Albatex* HW

This product is said to prevent staining of wool with direct colors when dyeing blends of wool and cellulosic fibers. Also makes possible a one-bath procedure for dyeing acrylic and cellulosic fibers with cationic and direct dyes in acid medium.

Lyofix* ZU

This is reported to be a highly efficient product for improving the wetfastness of dyes and prints with minimum effect on shade.

Melafix* II

Exerts a strong buffering effect during the wet chlorination of wool for shrinkage control. It is said to prevent damage or unlevel results due to uneven chlorination.

Retarder O

This is said to be a very efficient retarding agent for cationic dyes, particularly effective in the critical dyeing range between 170°F-212°F.

Sapamine* WLS

A nonyellowing, cationic softener for materials composed of cotton, rayon, acetate, nylon, wool or silk. Little or no effect on shade or lightfastness of dyes.

Uvitex* CF

An optical brightener for pure strong whites on cellulose, polyamide, and wool fibers. It is said to be stable to peroxide and hydrosulfite, and to have very good acid resistance. Suitable for use with crease-resisting resins.

* * *

CINDET CHEMICALS, INC
P O Box 907
Greensboro, NC

Cindet Acid A

Cindet Acid A is the sulfonic acid of an aryl benzene alkane. It contains 7% free sulfuric acid and 4% moisture. It is a dark viscous compound from which stable, light-colored detergents and surface-active agents can be manufactured. Neutral detergent compounds may be made with caustic soda, caustic potash, triethanolamine, and various other basic amines, depending upon the type of products desired. In the manufacture of detergents, the Cindet Acid A should first be diluted with water to give the desired activity, then the alkali added to the pH required. When caustic compounds are used, the final product should be under 25% in activity or isopropanol added or an unstable slurry will be formed. With triethanolamine, clear products can be obtained at much higher concentrations.

Cinvel C-100
Cinvel C-25

Cinvel C-100 is a complex stearamine, 100% active, in form of a light cream-colored wax. It is cation active in character. It is said to be a most unusual 100% wax, cationic softener and lubricant, as it is readily dispersible in hot water (160°F to 180°F) forming a rather thick dispersion that thins as it cools.

Cinvel C-25 is an easily pourable 25% dispersion of Cinvel C-100 which is readily dispersible in cold water. Dispersions of other percentages of Cinvel C-100 may be obtained if desired.

Cinvel C-100 and dispersions of it are very stable and may be used in any operation where a cationic compound may be used. It is highly efficient, and with its low cost, is claimed to provide the best of money value when used as a finish on all types of yarns and fabrics to obtain a soft, lofty effect high in lub-

*Registered trademark

*Registered trademark

*Registered trademark

ricity. It is further claimed that the novel manner in which Cinvel-100 is made reduces considerably the presence of free amine which is often the cause of yellowing of bleached fabrics, the percentage of chlorine retention of "wash-and-wear" finishes, and the effect on lightfastness of many dyestuffs. It is stated that, in this manner, Cinvel C-100 causes a minimum of yellowing on whites and deleterious effects on resin finishes and dyestuffs.

Cinwet BOS

Cinwet BOS is an amber colored oil, and is composed of sulfonated butyl oleate, 63% active. It is anionic in character with a pH of 6.2 to 6.4. As a surface-active agent it is said to be very stable in acid solutions, mild alkali, and hard water. It produces only moderate sudsing while exhibiting very fast wetting, when measured by the "Draves Test". It is stated that Cinwet BOS, being fatty in nature, will impart mild lubricating value, so it does not cause harshening of fibers or fabrics. It is said to impart excellent rewetting values and is recommended, by the makers, for use where this type of action is desired in connection with compressive shrinking. It is claimed to be ideal for use as a wetting and protective medium in the carbonizing process used on wool and worsted. Its mild lubricating value is said to reduce the harshness often experienced by this process.

Trouble-free dispersions are reported to be obtained by the use of Cinwet BOS as an aid in the dispersing of polyester-type dyestuff. Its anionic fatty nature lends itself perfectly in the preparation of "solutions" of this and other anionic types of dyestuff.

Cinwet K
Cinwet KC

Cinwet K is a sulfosuccinate in the form of an almost colorless thin gel with a mild solvent odor. It is 20% active with an approximately neutral pH. It is said to be a very fast wetting agent of excellent money value. It is anionic in character and very stable in mild alkaline and acid solutions, and is highly recommended by the makers for use in connection with all types of dyeing. It is not as low in sudsing value as Cinwet LS but may be used without difficulty where some sudsing may be tolerated. It is also offered at other concentrations where it is so desired.

Cinwet KC is 35% active, and produces double the wetting strength of the Cinwet K type.

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CONTINENTAL CHEMICAL CO
195 Twenty-first Ave
Paterson, NJ

Concamine OC

A new cationic softener which is said to produce a full, soft, round hand on both synthetic and natural fibers and fabrics. It is especially recommended by the manufacturers for Acrilan, Orlon, nylon and cotton. Approximately 1% on the weight of the fabric should be used.

Concamine WL

A new cationic softener which produces a similar hand as Concamine OC, but has greater resistance to yellowing at high temperatures encountered in resin finishing.

Conco Emulsifier J

A 100% active nonionic-anionic blend used in making stock solutions of Varsol, naphtha, toluol, or xylol. Ten parts Conco Emulsifier J plus 90 parts solvent form a clear solution and the resulting water emulsion shows goods stability.

Condensate NP

A 100% modified fatty-acid amine condensate which is said to be especially good in scouring wool and wool/synthetic blends. It is said to give very low residual oil results and tends to leave wool less harsh than pure nonionic scouring agents.

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CREST CHEMICAL CORP
225 Emmett St
Newark 5, NJ

Avicrest

Avicrest is a napping agent for softening and bringing up the nap on synthetic fabrics of nylon and polyester composition. Avicrest is a concentrated product which is applied in a short bath or by exhaustion in a long bath. Applied to the fabric, Avicrest does not give a greasy or dead hand, but a live desirable nap.

Catacrest 100 WW

A 100% active liquid cationic softener. This product contains no inert material whatsoever and is produced in nearly water-white color. It disperses readily in ice water giving low-foaming solutions. Catacrest 100 WW is used to obtain a soft hand on cotton, rayon, acetate and synthetics. It may be used with all types of resins to mellow the handle. Since Catacrest 100 WW is light in color and since it has high scorch resistance, it can be applied to whites with no yellowing. The high activity of the cationic softener permits the most economical use.

Crestex Mothguard

Crestex Mothguard is a permanent repellent agent which when applied to wool, will, it is claimed, effectively prevent damage when exposed to black carpet beetle larvae for the life of the wool regardless of the number of washings and drycleanings. Crestex Mothguard is easily applied to the wool by simply running it for 30 minutes at 140° at pH=2.

Crestofine DS

A nonionic softener available in high strength at low cost. Crestofine DS is said to show excellent softening qualities when used with or without resins in a short bath. It is further said to exhibit unusally good scorch resistance and can be used on fabrics which are subject to high-temperature drying. It is a nonionic softener and is compatible with all types of finishes and agents that are used on textiles. Used with resins, it is said to add to abrasion resistance, increases tear strength and improves sewability characteristics.

Crestofix CUB

A liquid fixative for direct dyestuffs. It contains both fixation ingredients and copper salts said to be effectively reacted to provide optimum results. In the dye box it is applied in the last rinse of the dyeing process in concentrations of 3-5% on the weight of the fabric. The use of combined copper salts is said to improve the lightfastness and washfastness of the results.

Crestol Conc

A nonfoaming phosphated surfactant which is recommended by the manufacturers for wetting, leveling, and dispersing action in neutral and alkaline solutions. It is said to be stable and effective in caustic soda solutions. It is stated that it shows excellent stability to caustic hydrosulfite, hypochloride and peroxide solutions, and forms complexes with heavy metal irons, thereby eliminating the deleterious effects of their presence. It is used effectively in the dyeing of sulfur colors.

Crestonol

A detergent blend which combines the advantages of several different types of detergents. It is a liquid product miscible with water in all proportions. It is said to possess outstanding properties as a wetting agent, emulsifier, detergent and dispersant. It is used to scour fabrics in all stages of manufacture. Among the uses in which it is employed are kier boiling, raw wool scouring, desizing, bleaching, dyeing, printing, and soaping.

Crestosulf Oils

A series of true sulfonated oils possessing carbon-to-sulfur bonds. It is claimed that these oils, in contrast to conventional sulfated oils, are stable to caustic and acid baths. They are used as wetting, leveling, and emulsifying agents. In particular, they can emulsify large quantities of raw oils and mineral oils. They are said to represent a new and novel approach to the field of processed oils. These oils are produced in 100% active form and form a light opalescent solution when dissolved in water.

Crestscroop

A 100% active scrooping agent and softener. In the form of a soft wax, it dissolves readily in hot water giving low-foaming solutions that are used to impart a crunchy, scroopy hand to rayon fabrics. This product is said to be easy and economical to use.

Dacrest Carrier Paste

A nontoxic, nonsolvent-containing carrier for dyeing polyester and polyester blends. It is easily applied in a simple dyeing procedure. It is exhausted from solutions onto the goods. It is claimed to give level economical dyeings, clear bright colors, rapid dyeings, maximum lightfastness, and maximum color yield.

Velvacrest L

A snow-white, stable liquid emulsion which is chemically a new type stearic acid amine in pure state. It contains no emulsifying agents, no solvents, no polyethylene, no waxes and no adultrants of any type and can be added directly to the softening bath without preparation or dilution of any sort. It is said to assure a durable, soft, lofty hand with maximum draping qualities for all synthetics. This softener is claimed to be a true cation-active agent giving unsurpassed softening of synthetics; it exhausts fully from solutions, shows no discoloration on pressng, curing or aging of goods, and preserves maximum lightfastness of dyed goods.

CROWN CHEMICAL CORP
240 India St
Providence3, RI

C-TRON* 250
A low-chlorine-retentive condensate of crease-resistant "wash-and-wear" finishes on cellulosic fabrics.

Crown Catalyst 109
A rapid curing catalyst for use with thermosetting resins.

Dryon*MI
A durable mothproofing and water-repellent compound for treating woolen fabrics.

Dryon*NFZ
A high-performance, zirconium-containing water repellent, compatible with many finishing compounds.

Estramine*G
An amphoteric softener which may be applied on the acid or alkaline side; it is said to impart excellent softening characteristics to all types of fabrics.

Nepton*B
A durable-type water repellent; may be used alone or with thermosetting resins.

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DE PAUL CHEMICAL CO, INC
44-27 Purvis St
Long Island City 1, NY

Acetate Weighter
A unique combination of resins, organic and inorganic salts to add weight on acetate tricot yarns and piece goods.

Depco Level #52
A unique dye-leveling agent and dye assist for use with all types of fiber where basic dyes are used.

Depco Level ACD
An excellent dispersing agent for acetate dyes, anionic, but does not precipitate with cationic products.

Depco Resin EL
A polyvinyl acetate emulsion for firm hand on all synthetic fibers. Also used for permanent pleating.

Depco Scour #12
A detergent which combines detergency and a balanced solvent action. Claimed to be an ideal product for a one-bath method for scouring and dyeing.

Depco Scour Base
A blend of surfactants designed to emulsify all types of solvents.

Depcoterge LF
A nonionic detergent with controlled foam said to be ideal for enclosed vehicles. It is claimed to be a fine scour and wetting agent.

Depcowet 70
A highly concentrated and said to be a most powerful wetting agent, stable in a wide range of pH2-pH9.

Nylon Weighter S
A combination of organic and inorganic and hygroscopic materials to increase weight on nylon fabrics.

Palofix
A fixing agent for direct dyes, which is said to improve wetfastness with no effect on lightfastness and not cause change of shade.

Palostat PM
An antistatic agent which, it is claimed, will stand a great many launderings and is not effected by drycleaning. Affinity for all synthetic fibers does not effect lightfastness.

Polyemulsion WSS
A softener and plasticizer in thermosetting resin finishes which is said to increase tear strength and add seam strength.

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E F DREW & CO, INC
Textile Chemical Department
15 East 26th Street
New York 10, NY

Drewsoft 100
A 100% active nonionic softener in flake form. Recommended by the manufacturers for use on cotton, synthetic fibers and blends of cotton/synthetic fibers.

Drupene VO-250
A 50% active surface-active agent which is said to enhance the fastness of raw stock-dyed wool so that there is no bleeding of color on to adjacent white effects in fulling and scouring. It eliminates the necessity of prescouring heavily oiled garnetted stock before raw stock dyeing.

Drucomine 9650
A 50% active cationic softener which is said to impart a characteristic smooth feel and a high degree of softening and surface lubrication to all fibers.

Drupene AR-80
100% active nonionic detergent. It is said to possess minimum backwetting effect, high detergency and fabric lubricating properties.

Drustat WOR
100% antistatic finish said to be effective on all synthetic fibers.

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E I duPONT de NEMOURS & CO, INC
P O Box 386
Wilmington 99, Del

Zeset* MCE Fabric Stabilizer
A thermoreacting resin designed to produce excellent, durable crease-resistant and dimensionally stable effects on cotton and rayon fabric. The finishes are said to have good resistance to damage caused by retained chlorine from bleaching with hypochlorite and drying with heat. Zeset MCE is applicable to a wide variety of woven and knitted goods. The use of Zeset MCE in combination with Zelan durable water repellents is said to result in the production of outstanding crease-resistant and water-repellent finishes on the fabrics mentioned. Zeset MCE is readily handled and applied by conventional methods used in textile mills. The product has remained stable to normal storage conditions for several months and is believed to be indefinitely stable. Application baths are completely stable and emit very little odor of formaldehyde around the padder and frame.

*Registered trademark

EASTERN COLOR & CHEMICAL CO
35 Livingston St
Providence 1, RI

Ecco Flameproof A-5-L
A modified borophosphate flameproof product which, it is stated, may be applied with compatible binding agents to give a durable flameproof finish sufficient to meet New York City's Board of Standards and Appeals specifications.

Eccolene C-27
Cationic softener and lubricant for improved sewability of cottons and synthetics with no yellowing, nonchlorine-retentive properties. This product is a stable white-liquid emulsion, readily soluble at room temperatures and compatible with nonionic and cationic finishes.

Eccolene OW-AS
Anionic sulfated ester complex designed to give wetting, rewetting, softening and antistatic properties to this finishing oil. This product may be used in compressive shrinking as well, with minimum yellowing and good scorch resistance. This product is also useful as a finishing oil and lubricant in yarn processing.

Eccosoft 36-G
Liquid cationic substantive softener for both natural and synthetic fibers, which is said to give a full "glovey" hand. It is stated that this product gives improved sewability, resistance to aging, with outstanding softness at low concentrations. The physical liquid state makes for easier handling, less loss in plant uses and more rapid solution directly in the finishing bath with no predissolving required. This material has complete compatibility with finishes.

Eccosoft SA-36
Liquid anionic substantive softener possesses the same properties as Eccosoft 36-G except being anionic in nature. In addition, SA-36 has been found to be a valuable softening agent for Orlon yarns with no yellowing.

Gloprint Conc WK-4
A concentrated extender/binder for aqueous pigment textile printing. Versatility permits all aqueous prints to aqueous/solvent systems containing upwards to 40% solvent. Variations in the cuts of this product are said to yield print pastes ideally suited to machine roller printing, automatic screen printing or hand screen printing, on all types of fabrics to give exceptionally soft prints. Acceptance and approval of the use of WK-4 in printing Fiberglas makes this a desirable product in meeting the standards established in glass fabric printing.

Low Crock Super-80
Aqueous resin emulsion anticrocking agent for use in aqueous pigment printing to substantially reduce the wet and dry crockng of dark heavy prints.

Low Crock C-90
Aqueous resin emulsion complex designed for aftertreating of heavy pigment prints to eliminate crocking and improve washfastness of the finished materials.

Ecco Retarder O-100
Dye retarder for Orlon dyeing with basic dyestuffs. It is said to give the retardation and leveling necessary in Orlon dyeing. This product is anionic and is active from the dyestuff rather than from the fabric.

Ecco Ribbon Finish
A high active content resin for stiffening of synthetic and natural fibers. This material is said to be extremely useful in acetates, nylon sheer, acetate taffeta and silks to give the organdy "rustle" finish. Ths product is said to give a durable, water-insoluble finish when properly dried. The material has indefinite storage stability.

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EMKAY CHEMICAL CO
319-325 Second St
Elizabeth, NJ

Emka Catalyst P-35
An organic amine catalyst, said to give excellent bath stability and fast cure for thermosetting resin finishes.

Emkacide MRF-2
A mildew-resistant finish which is said to have good washfastness. A clear liquid easily soluble in water. It is stated that it has good germicidal properties, imparting some softness to the finished goods.

Emkalar Base OPP-7C
A blend of anionic emulsifiers. A base specifically designed for use with o-phenylphenol (eg, Dowicide #1), to prepare dye carriers. The use of Emkalar Base OPP-7C with o-phenylphenol makes possible appreciable savings in dye carrier costs.

Emkalar BP-55
A prepared dye carrier based on biphenyl and emulsifiers, designed to produce deep shades on polyester and triacetate fibers. It is easy to apply with good dyebath stability.

Emkalar OPP-6A
A dispersion of o-phenylphenol in paste form. It is a prepared carrier for use with such synthetics as Dacron 54 and 64, Arnel and Kodel. It is stated that it is dispersible in hot water, has a high color yield, and is economically priced.

Emkalite BAC
A blend of selected surface-active agents in powder form. This novel textile auxiliary is specifically designed as a partial stripping agent for cationic dyestuffs from acrylic fibers (Orlon, Acrilan). It is stated that it evenly removes the basic dyestuff, making easier the production of level redyes.

Emkalon ES, ESK, ESX
A series of nonionic softeners, 20%, 25% and 50% active respectively. Translucent gels, soluble in warm water, compatible with resins. Excellent softening properties and lubricity are claimed.

Emkalon VNN
A nonionic softener for use with resins. Offers good compatibility, softening, lubricity and "sewability". Also available as a concentrate.

Emkalube FW
An economical trough oil and lubricant for full-fashioned knitting of nylon hosiery. Easily dispersed in water to give emulsions with good stability.

Emkapene AV
A pine oil-based product useful as a versatile dyeing assistant and penetrant. Stable to acid and alkaline conditions.

Emkapon KW
A combination of detergents and emulsified solvents. A solvent scour, stable in caustic solutions as high as 4%. Recommended by the manufacturers to remove waxes in oversizing of Dacron and other synthetic fibers.

Emkasize PE
A highly concentrated polyethylene softener, useful as a finish and of value as a size for polyester (Dacron) fibers.

Emkatint BR
An optical bleach for nylon and Orlon. May be used with detergents or peroxide. Exhausts quickly onto fabric. Small amounts will counteract yellowing action of some finishes.

Rexoclean RCA
A selected blend of solvents and synthetic emulsifiers. It is used to remove deposits with minimum scrubbing or scouring, lessening possible injury to fabrics, metals and rubber surfaces. It penetrates very quickly and can be flushed with cold water, rinsing off easily.

Rexosolve OA
A solvent scour based on detergents and emulsified solvents, compatible with oxalic acid. Its use with oxalic acid is said to eliminate the necessity for two-bath scours for cleaning grease and graphite from fibers.

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FINETEX, INC
418 Falmouth Ave
East Paterson, NJ

Detergents

Aminol COR
An alkanolamide. A foam booster and stabilizer when added to most known surface active agents, viscosity aid in the cosmetic field, and said to possess excellent detergency in solvent solutions.

Aminol CS-11
Alkanolamide derived from coconut fatty acid. Said to be excellent in foam boosting of the alcohol sulfates, alkylaryl sulfonates and other detergents.

Aminol CS-12
Coconut fatty acid alkanolamide. Claimed to be excellent alone or in combination with other surface-active agents. 98-99% active.

Aminol HG-CN
A fatty acid amine condensate containing an anionic solubilizing agent. Excellent detergent where strong alkaline builders are used. Not to be used in an acid medium or an acid system.

Aminol HG Concentrate
Derived from coconut fatty acid, contains anionic solubilizing agents for maintenance of a live active bath in the presence of caustic soda and soda ash.

Aminol LA-12
Derived from lauric acid. Very light pale straw color. Said to be an excellent foamer.

Aminol VR-14
An amine condensate derived from mixed fatty acids and said to be an excellent dispersing and emulsifying agent.

Rueterg 40-A
A 25% active ammonium salt of dodecylbenzene.

Rueterg 57-M
Specially formulated, modified type of alkylaryl sulfonate derived from sulfonic acid. 42.2% active.

Rueterg 40-NIA
A 40% active ammonium salt of dodecylbenzene.

Rueterg 97-S
A 90% active alkylaryl sulfonate in liquid form.

Rueterg 40-T
Amine salt of the dodecylbenzene sulfonate.

Rueterg 40-U
Specially formulated, modified type of alkylaryl sulfonate derived from sulfonic acid. 25.33% active.

Slurry #3
Grayish white, soft paste derived from the alkylaryl sulfonate. 55% active.

Sulfonic Acid
Dodecylbenzene sulfonic acid, honey-colored material. 95% active.

Tauranol MG
A sulfated amide, heavy gel. (Sodium-N-methyl-N-oleoyl taurate)

Tauranol ML
A sulfated amide in liquid form. (Sodium-N-methyl-N-oleoyl taurate)

Tauranol MS
A sulfated amide in slurry form. (Sodium N-methyl-N-oleoyl taurate)

Tauranol RS
Sodium-N - methyl - N-"tallow acid"-taurate. Smooth, white thixotropic paste.

Tauranol WL
Sodium-N-methyl-N-"coconut acid"-taurate. Clear liquid form.

Tauranol WS
Sodium-N-methyl-N-"coconut acid"-taurate. Pure white paste.

Sequestering Agent

Finekelate 160
Chemical compound developed to completely control normal hardness of water.

Softeners

Emolex 9158
A 33% active product, pale straw-colored paste. Compatible with all alkaline or neutral solutions.

Emolex N-1918
100% active, tan-colored hard sub-

stance. Suitable to formulate into more dilute products.

Emolex T-918
Suitable for all fibers, especially recommended for the manufacture of cottons and rayons.

Emolex A-133
A white pearly paste with a pH of 4.5. Can be used on all fibers.

Wetting Agent

Gemtex SC-70
Wetting agent, high active sodium dioctyl sulfo-succinate claimed to have outstanding wetting, penetrating and surface tension depressing properties.

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GEIGY DYESTUFFS
Division of Geigy Chemical Corp
Saw Mill River Rd
Ardsley, NY

Tinopal* ACA Liquid
This product represents the latest addition to Geigy's line of Tinopal fluorescent whiteners which has been designed primarily for use on acrylic fibers. It can be applied in the presence of Textone to produce a most brilliant white on Orlon, Acrilan 16, and other acrylics. It is claimed that, even when used as a self-whitener without Textone, a white is produced that surpasses the brightness of other optical bleaches with Textone.

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ANTARA CHEMICALS
a Division of
General Aniline & Film Corp
435 Hudson St
New York 14, NY

GAFAC® GB-520 (formerly Alipal® GB-520)
A modified alkyl phosphate ester. It is stated that its dispersibility in mineral oils and outstanding ability to emulsify such oils, combined with excellent lubricating, softening, and antistatic action, make it an ideal textile-finishing aid, especially for wool and synthetic fibers.

GAFAC® RE-610
GAFAC PE-510
GAFAC LO-529 (formerly Alipal® LO-529)
Anionic detergents and emulsifiers, said to be distinguished by outstanding stability to high pH. They are used in pressure kier boiling, bleaching, caustic boiling, and after-soaping of fast-dyed cotton goods, yarns, and printed fabrics. They can also be used in combination with builders as detergents in the scouring and bleaching of rayon and synthetic-fiber yarns and fabrics. They are also corrosion inhibitors and, with a sequestrant such as Cheelox® B-13, are outstanding in the control of iron in peroxide bleach liquors. In addition, GAFAC RE-610 has proved very effective in neutral and alkaline raw-wool scouring operations.

PVP/VA S-630
A solid (poly) vinylpyrrolidone/vinyl acetate copolymer. This powder is easily dispersed in water to form emulsions that may be used in sizes for textiles, glass fibers, nonwoven fabrics, etc. It has distinctive adhesive and film-forming properties that characterize the other PVP/VA copolymers.

*Registered trademark

Triethylene Glycol
This is the newest addition to Antara's line of glycols. Its uses are similar to those of ethylene and diethylene glycol. It is preferred when a product of lower volatility is required.

Uvinul® N-35
This new ultraviolet-radiation absorber is a substituted acrylonitrile, available as a white powder. It does not contain acidic hydroxyl radicals, which suggests its use in systems adversely affected by the presence of such groups. Although this product was originally designed for nitrocellulose lacquer, it is also of interest in systems such as butadiene-styrene latex, melamine-formaldehyde, urea-formaldehyde, epoxy-amine, nylon, polyvinyl chloride, polyesters, alkyds, etc.

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THE GOODYEAR TIRE & RUBBER CO
Chemical Div
1485 East Archwood Ave
Akron 16, O

Pliolite 176*
A 54% active aqueous dispersion of butadiene/styrene designed specifically for the textile backsizing applications.

* * *

HART PRODUCTS CORP
1440 Broadway
New York, NY

Clear Conc WP
Said to be a highly economical thickening agent for use with water-phase pigment emulsions in the roller printing of textiles.

Finish WR
A finishing composition for use in the resin treatment of cotton knit goods. The use of Finish WR together with thermosetting resins is said to give excellent stabilization of the goods together with a full hand and low tensile strength loss.

Hartex Carrier S
A dispersible, nontoxic dye carrier for use in the dyeing of polyester fiber.

Reginol 025
An assistant for use in naphthol dyeing to improve crockfastness. It is added to the coupling bath to disperse unfixed color so that it can be readily removed in the soaping operation.

Reginol 20A
A polyvalent surfactant for use in the dyeing of raw wool stock to overcome tippy dyeing.

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INDEPENDENT CHEMICAL CORP
70-30 79th Pl
Glendale, Brooklyn 27, NY

Speco Bleach W
A blend of nitrated sodium chlorite for use in bleaching and stripping nylon, Orlon and Banlon fabrics.

Speco WS 5
30% sulfonated alkyl ester. An anionic product, Speco WS 5 is said to be a highly efficient wetting and rewetting agent. Uses are for dye dispersion, desizing, and dyeing of nylon.

*Registered trademark

Speco WS 7
33% sulfonated alkyl ester in a light petroleum distillate. Uses are as dry-cleaning agent, and in oil solutions of herbicides as a wetting and dispersing agent.

Specotex SS
Nonionic paste product used as a lubricant in napping and shearing operations, and as a softener in resin formulations.

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ISOCHEM CORP
221 Oak St
Providence 9, RI

Isobarrier Coat
A modified polyacrylic resin for use as a coating and backfill finish for artificial leathers.

Isochem Safety Gel
For laboratory cleaning of various resins.

Isochemstrip 701
A polymerized alcohol for stripping of epoxy and polyester resins.

Isoheat Seal
A polyvinyl acetate adhesive base for use as a thermoplastic heat sealant and finish.

Isorez C
A casein stabilized polyacrylic resin for use in finishing of synthetics and as a dye anticrock and starch binder.

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LAUREL SOAP MFG CO, INC
Tioga, Thompson & Almond Sts
Philadelphia 34, Pa

Polylube FFN
A polyethylene-type softener which is said to exhibit excellent resistance to aging and which is compatible with the newest types of catalysts, particularly zinc nitrate, which are used with thermosetting resins. It is stated that it will impart a soft hand and improve tear strength and abrasion resistance.

Spinol AA
A new improved soluble coning oil recommended by the manufacturers for use on cotton and certain spun synthetic yarns where good lubrication and excellent emulsion pickup is desired. Spinol AA is also recommended for use as a lubricating and conditioning agent on wet twisters.

Water Repellent Z
A wax/zirconium water repellent of high activity and efficiency. It has been improved to give minimum effect on shade bleeding and other side effects, while having excellent water repellent value.

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LENOX CHEMICAL CO
Printery St
Providence 1, RI

Anti-Fade LC-2
A durable gas-fading inhibitor for acetates, nylons, and dyeing with acetate disperse dyes. Has no effect on shades or lightfastness.

Catalyst 66
An inorganic salt catalyst necessary in

the application and curing of Lenopel 66. This catalyst is so buffered to keep tensile strength losses at a minimum.

Catosoft Conc 100

A 100% active cationic softener, readily soluble in warm water. The product may be applied directly to the finishing bath or predissolved to form a stock solution. It is stated that Catasoft Conc 100 is nonyellowing, compatible with thermosetting resins and produces a most desirable soft, mellow handle. Extremely high sewability and nonchlorine-retentative properties are said to be realized with its use. Most applicable to cotton and synthetic fabrics, with exceptionally fine antistatic properties.

Lenopel 66

A durable water repellent, readily soluble in room-temperature water. Excellent spray ratings of many laundering cycles on cottons, synthetics and blends thereof are said to be realized on its use. It is stated that it is compatible with thermosetting resins with exceptionally fine running properties, especially as to nonbuildup on pad rolls.

Lenoscroop 600

A pure-white, nonyellowing, cold-water-soluble napping softener which offers a crunch or scroop on cotton fabrics, especially flannels. It will not affect dye shades and may be padded or added to the last rinse of the dyebath.

Lenosoft 425

A nonyellowing amphoteric type of softener of neutral pH, readily soluble in warm water. It is said to produce a pleasing soft handle on cottons, synthetics and wools.

Lenoterge ASA

A kier boil assistant which will tolerate high percentages of acids, salts and alkalis without turning turbid in the bath. It is claimed that it removes more natural coloring matter, waxes, pectins, etc from cotton greige goods while producing a whiter "white" and superior handle.

Lensol 33

A highly nonyellowing, nonionic, antistatic spinning lubricant with optimum scourability. Lensol 33 will tolerate high percentages of acid, making it most suitable for goods carbonized in the grease. The product is most suitable for wools, specialty fibers and synthetics.

Lensol 40

A nonyellowing, antistatic spinning lubricant, particularly suitable for specialty fibers and synthetics. Cashmere, camels, hair, mohair, as well as Orlon and lambs wool blends are most applicable. The product is said to exhibit high scourability and offer exceptionally fine carding and spinning yields.

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MAC CHEMICAL CO
5113 Kingston Pike
Knoxville, Tenn

Macco Scourwet

A 35% active aqueous solution of the sodium salt of a sulfonic acid. To be used as a scouring and wetting agent combined, in either an acid or alkaline bath.

Macco Scourwet T

A 40% active aqueous solution of the sodium salt of a sulfonic acid. To be used as a scouring and wetting agent combined, in either an acid or alkaline bath.

Macco Scourwet TP

A 54% active aqueous solution of the potassium salt of a sulfonic acid. This product is a semi-gel and is said to be excellent as a scouring agent for removing coning oils, grease and graphite. It may be used in either an acid or an alkaline bath.

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EDWARD MENDELL CO, INC
P O Box 610
Yonkers, NY

Nouraltex TBV/2*

This is a readily soluble material used in an emulsion system of printing with fiber-reactive dyestuffs. It is used to determine and hold the viscosity, and is particularly stable in solution. It is always used in combination with an emulsifier. Chemically, Nouraltex TBV/2 is sodium alginate.

Nouraltex HV 85*

This is a print paste thickener of very high viscosity, which is absolutely free of calcium. Chemically, Nouraltex HV 85 is sodium alginate.

Nouraltex SS*

This is a medium viscosity print paste thickener, readily soluble even in hard water. Chemically, Nouraltex SS is sodium alginate.

Nouraltex CH*

This is a print paste thickener especially developed for screen and roller printing of textiles. Chemically, Nouraltex CH is a buffered sodium alginate.

Nouraltex THV 180*

This material is a print paste thickener. Chemically, it is a sodium alginate of high viscosity.

Nouraltex MV*

This is a print thickener. It is also especially useful in the prevention of migration of the dyestuff to the selvage. Chemically, it is a sodium alginate of medium viscosity.

Superamalgine*

This is a thickening agent for creaming latex. It is also used in sizing and coating. Chemically, it is ammonium alginate.

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METRO ATLANTIC, INC
Centredale 11, RI

Atco* Catalyst ZN-66

A scientifically designed organometallo catalyst which is said to exhibit complete compatibility in resin baths containing phosphates, borates, sulfates which would ordinarily be precipitated with a metallic catalyst. Improved crease resistance as well as resin fixation is said to be obtained. It is compatible with most of the water repellents used in combination with resin in the industrial field. Atco Catalyst ZN-66 may be used in wash-and-wear type of resin applications.

Atco* Finish SRF

An anionic softener possessing substantive properties. It was developed to produce a soft smooth finish non-greasy in nature imparting antistatic and soil resistant properties to various fibers. It is applicable to animal hair, vegetable fibers such as cotton and synthetic cellulosic fibers.

Atcosoft* VS

An extremely stable nonionic softening agent and fiber lubricant which may be applied in any finishing formulation where a full smooth hand is required. Atcosoft VS may be applied along with thermosetting resins to obtain finished fabric.

Chlordare* NC

A fiber reactant thermosetting resin which is said to impart high crease resistance, good dimensional stability, and good chlorine resistance on cellulosic fibers. When Catalyst ZN-66 is used with Chlordare NC—both good wash and wear properties as well as good whites are obtainable. Chlordare NC may be formulated with a wide variety of textile finishing additives. Chlordare is said to show good resistance to chlorine—therefore additives should show the same general properties before formulating if good chlorine resistance results are required.

D-Stat* NX

A highly concentrated fluid form of antistatic agent which may be applied to a wide variety of synthetic hydrophobic fibers. It may be applied as well to the ordinary forms of plastic sheeting to minimize static encountered during processing.

Emboset* C

A highly concentrated thermosetting resin which is used on a wide variety of resin finishing applications. Emboset C produces a moderately full finish on hydrophlylic materials such as cotton, spun rayon or blends. It is stated that it also possesses fast curing properties and is characterized by its low free formaldehyde content.

Emboset* NL

A modified polyhydroxylated methylol urea possessing unique properties for producing crisp finishes on various types of nylon and Dacron marquisette fabrics. Crocking, dusting, and mark off are said to be minimized. Emboset NL may be used in conjunction with Catalyst ZN-66 in application.

Melomel* 14

A melamine type resin which has been designed to impart a firm crisp finish on hydrophobic fibers. It is also applicable to cellulosic fabrics where a durable thermosetting resin may be required. Melomel 14 is compatible with most of the commonly used softeners used in resin finishing.

Melomel* HC

A methylated methylol melamine which is said to have excellent crease-proofing and shrinkage control properties suitable for hydrophilic fibers. Applied to hydrophobic fibers such as nets or sheers Melomel HC is said to produce a highly desirable crisp finish without mark off or working commonly experienced. Melomel HC is non-chlorine retentive and non-yellowing when used with the proper catalyst.

Melomel* ZM

A modified methylated melamine resin which is applicable to all fibers and

*Registered trademark

*Registered trademark

all types of constructions. Melomel ZM is said to possess excellent chlorine resistant properties and will not yellow to the same degree as conventional melamine resins in the presence of chlorine type bleaching in laundering. Crisp finishes may also be obtained on sheers or marquisettes with both nylon or Dacron fibers.

Mildare* XY-75

A non-toxic, non-poisonous, white water disenfectant first developed by Metro-Atlantic, Inc to control slime resulting from the presence of microorganisms in white water for the paper industry. This may also be applied in those water treatment plants of the textile industry where pretreatment coagulation basins have become contaminated. Another application is in the treatment of effluent from sewage or industrial waste treatment plants.

Ranepel*

A durable water-repellent finish specifically applicable to cotton or rayon. Blends of synthetic fibers with cotton as the principal component may also be used in conjunction with Ranepel to produce water repellent finishes with good resistance to laundering and dry cleaning. Ranepel may also be used as a softener when used in low concentration with textile finishing formulations to impart a soft mellow handle on many types of fabric. Ranepel may be incorporated along with flurocarbons in the QM Corps Quarpel finish.

Rezsoft* LCW

A cationic synthetic softener which is recommended by the manufacturers for any textile application where a soft full hand is required. Rezsoft LCW is a good all purpose softener particularly recommended for use with thermosetting resin finishes with which it is said to exhibit excellent compatibility. Rezsoft LCW reduces the harshness of the resins to produce a full, mellow hand. Rezsoft LCW imparts antistatic properties to nylon, Orlon, and other synthetic materials. It is produced in a fluid state which reduces mixing time in preparing the finishing solution.

Rezsoft NI

A nonionic, non-chlorine retentive, non-yellowing, reactant softener which is compatible with most finishing agents, and catalysts. Rezsoft NI will polymerize with any compound which can readily react with active hydroxyl groups. On hydrophobic fibers Rezsoft NI is said to impart antistatic properties along with the property of fiber lubrication with hydrophilic fibers. It is stated that Rezsoft NI penetrates and lubricates to improve tear and abrasion resistance and at the same tme produce a luxurious hand. The Rezsoft NI hand is described as being soft, smooth and supple. The finish is applicable to facecloths, dishtowels, table cloths, shirting and a host of fabrics which are sold on the basis of the textured hand.

Thermorez* W

A new liquid thermosetting resin developed primarily for applications on spun rayon and spun rayon blends where high crease recovery and dimensional stability is a requirement. It is stated that good laundering durability provides a characteristic useful in producing minimum-care finishes on spun rayon or spun rayon blends. Shade change of dyestuffs or lightfastness changes from the application of Thermorez W are at a minimum.

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M MICHEL & CO, INC
90 Broad St
New York 4, NY

Michelene* 40

An antistatic treatment for woven nylon goods which requires no curing after application and is effective through initial launderings.

Michelene* CNX

A micronized cetyl alcohol compatible with aqueous finishing and waterproofing formulations and capable of forming monomolecular films with lubricating properties.

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MORNINGSTAR-PAISLEY, INC
630 W 51st St
New York 19, NY

Arofilm

Oxidized tapioca starch. Supplied in range of viscosities from 0 to 90 fluidity. Produces clear stable solutions, especially suitable for textile warp sizing and finishing.

Starfilm

Potato and tapioca starch derivatives. Supplied in range of viscosities, from 0 to 90 fluidity, and in both cookup and cold water-soluble grades. Solutions are clear and exceptionally stable, even in high concentrations. Crosslinks with thermosetting resins and recommended by the manufacturers as hand builders for durable finishes. Also used as warp sizes for blends with synthetic fibers.

Startex

A series of cold water-soluble print gums, readily soluble, producing high viscosities with easy washout characteristics. Compatible with a wide range of dyestuffs.

Tab-a-Tex 31-44

A modified vegetable gum, cold water-soluble, extra high viscosity, suitable for a wide range of dyestuffs.

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NEVILLE CHEMICAL CO
Pittsburgh 25, Pa

High Purity Indene

A bicyclic aromatic hydrocarbon with two reactive centers—the double bond and the methylene group— both in the benzene-fused five-membered ring. It is a mobile, almost water-white, high boiling (182°C) liquid similar in appearance to rubber grade monomeric styrene, with a density at 25°C and a freezing point of —3°C.

Potential Uses:
- Polyester fiber materials
- Synthetic rubbers
- Copolymers
- Insecticides and repellants
- Medical uses (pharmaceuticals)
- Dyes
- Plasticizers
- Antioxidants
- Surface active agents
- Synthesis of steroids, vitamins

High purity Indene is produced by a patented process.

Nevillite

A hard, water-white, synthetic hydrocarbon resin with a chemical structure of a linear polycycloalkane. It is a neutral, nonsaponifiable, permanently thermoplastic crystal clear resin.

Potential Uses:
- Modifier
- Filler
- Softener
- Tackifier

Applications:

Adhesives, protective coatings, electrical applications, paper, rubber, tile, printing inks, dental compounds, plastics, chewing gum, and paraffn novelties.

Nevillite process is patented.

Nevinol A

Light colored, highly aromatic, low odor, plasticizing oil or high boiling solvent of coal-tar origin.

Uses: Plasticizer, impregnant, solvent, heat transfer agent, pigment dispersant, tackifier.

Applications: Plastics, adhesives, dyes, caulking compounds, aluminum pastes, cosmetics, rubber goods.

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OLIN MATHIESON CHEMICAL CORP
Chemicals Div
Mathieson Bldg
Baltimore 3, Md

Poly-Tergent* LF-400

A 100% active, liquid, nonionic wetting agent, said to combine very low foaming properties with excellent detergency.

Propylene Oxide

A highly reactive chemical intermediate for the synthesis of wetting, emulsifying, leveling and softening agents for textiles, leather and paper.

Propylene Glycol

A nontoxic, high boiling solvent for dyes used in printing cloth for food packaging applications.

Dipropylene Glycol

A high boiling solvent for use in textile lubricant formulations and with basic, acidic and some chrome dyestuffs for both dyeing and printing operations.

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ONYX CHEMICAL CORP
Warren and Morris Sts
Jersey City 2, NJ

Lanosan

A highly active lanolin softener dispersed in an anionic base. It is said to produce a soft hand with a smooth, slick surface with good resistance to yellowing, a wide range of compatibility, and ease of dispersibility in warm water.

Nutralan

Similar in properties to Lanosan, with the exception that the lanolin softener is dispersed in a nonionic base.

Onyxsan* FW-25%

A cationic softener designed to disperse in tap water with a high level of softening power from the pad or long bath. It is white in color, and is well suited for resin work because of its resistance to discoloration. Other uses are as a lubricant in acid fulling and plasticizer of gums and starches.

*Registered trademark

*Registered trademark

*Registered trademark

Onyx Resin O-5
A 50% active water-soluble triazone resin, modified to provide low odor potentials after curing. It is said to impart crease resistance and stabilization with exceptional resistance to chlorine degradations after alkaline launderings.

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ORGANIC CHEMICAL CORP
84 Valley St
East Providence, RI

Orco* Blanc WN
This product is a non-yellowing self-binding white pigment for roller and discharge printing. It is recommended by the manufacturer for over-printing on dyed grounds and, due to a self-contained sulfoxolate-resistant blueing, will produce permanent whites. Since the use of this product does not affect the viscosity of the print paste, sharper prints, are assured.

Orcocene Softener CI-35
A cationic water-dispersible paste, this product is recommended by the manufacturers as a lubricant softener and antistatic for all types of woolen-worsted and synthetic piece goods as well as yarn. Orcocene Softener CI-35 has outstanding compatibility with regular fabric finishing agents and can be used quite safely over a wide pH range.

Orcocene Softener NI-65
This nonionic softener is a special non-yellowing, nitrogen-free type which can be used alone or with resin, starch or gum finishes and is equally effective on all fibers. It is said to possess excellent antistatic and moisture retaining properties, prevent rancidity or odor develment, facilitate high speed sewing, and inhibit fading of acetate colors. This softener is further said to be very economical to use.

Orco* Dye Assist S
This product is a high molecular weight aromatic condensate, which, it is claimed, has proven itself in mill trials to be an effective retarding agent. As a result of its retarding qualities, it is recommended as a leveling agent in the dyeing of all types of wool colors with a special emphasis on piece goods dyeing.

Orco-Lo-Crock WIO
This product is an oil soluble anti-crock agent for use in water-in-oil machine roller printing. It is claimed that, in addition to outstanding crock resistance in all prints, Orco-Lo-Crock adds depth and brightness, thus generally improving color values. It has no adverse effects on the flow or body characteristics of established printing paste formulations.

Orco* Meti Bind 40, 50, 60
These products are binders which are said to offer outstandng performance in the production of bright and sharp bronze powder prints. They are said to have excellent fastness to washing and dry cleansing. The 40 type is recommended for slower, heavier roller printing on cotton, rayon, glass fabric and other synthetics. The 50 type is to be used for high speed roller printing on glass and cellulosic fibers. The 60 type has been designed for screen and roller printing of all types of textiles, clothes, and paper.

*Registered trademark

Orco* Synthrowite CRC
This product is an optical bleach in solution form for whitening of cotton and rayon. Orco Synthrowite CRC is claimed to produce an extremely clear white with fastness properties comparable with competitive fluorescent bleaches. It is said to have excellent stability to storage and its solution form considerably eases the handling and dispensing problems. It is further said to be economical to use and give excellent value.

Orco* Synthrowite Powder S-80 New
A new optical whitening agent developed primarly for cellulosic fibers. This product also produces a neutral cast of pure white on silk and nylon making it a useful union auxiliary. Orco Synthrowite Powder S-80 New can be applied by any of the normal methods of application and is compatible with most of the common ingredients used in finishes. By the use of a long bath, the exhaustion rate of this product can be slowed thereby promoting more levelness than other more rapid exhaustion types. It is said to be economical to use and give excellent value.

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ORIGINAL BRADFORD SOAP WORKS, INC
West Warwick, RI

Catalyst 18
An aqueous solution of organic and inorganic salts designed to produce increased physical properties under varying conditions.

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PARA-CHEM, INC
Ontario & Rorer Sts
Philadelphia 34, Pa

Paranol Latex 100
Styrene butadiene latex said to possess good aging qualities for use in carpet or upholstery backsizing.

Paranol Latex 263
Self-curing latex containing anti-oxidant. Recommended especially for use in carpet backsizing.

Paranol Latex 265
Self-curing latex containing anti-oxidant and said to show excellent aging properties. Recommended for use on draperies and upholstery fabrics.

Paranol Latex 300-HS
High styrene latex said to exhibit excellent aging qualities. Recommended as an additive to latex compounds to provide stiffening.

Paranol Plastic F-5723
An acrylic copolymer with inherent softness and flexibility. Forms a tack-free film and is especially recommended for coating of flat goods.

Paranol Resin #11
An especially compounded polyvinyl acetate adhesive for use in the lamination of automotive carpeting to felt pads.

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W PERRON CO
Box 35
Ridgewood, NJ

Soluprint Carrier AH
An extremely effective carrier for printing polyester and Arnel fabrics. Thermal fixation at normal resin curing temperatures has been found to be suitable. Wet fixation (aging or steaming) is claimed to result in improvements appreciably superior to other competitive types. Sharpness of mark and clarity of shade are advantages imparted by this product.

Soluprint Carrier DC
An emulsion of active swelling agents for the printing of polyesters and other synthetics. Color yield is high. Thermal fixation at normal temperatures is readily accomplished. High fixation efficiency is said to be effected when wet heat (aging) is followed by dry heat. Selected dyes and thickeners can often improve results.

Soluprint Carrier 3-119
A novel print accelerant found to be effective on Arnel, polyester and other synthetics. It is said to have excellent compatibility with print thickening systems. It is stated that, being non-phenolic, its use results in improved lightfastness. It is essentially nontoxic and odorless. This product is said to provide a sharp mark and good clarity and brightness of shade compared with other carriers.

Soludye Carrier 3-211
A readily dispersible, free-flowing emulsion which is said to provide an excellent accelerant for dyeing polyesters and other synthetics. It is further said to give a rapid "strike" and good color yield. Ease of use, nontoxity, and full, level shades are the virtues it is claimed to contribute.

Soludye Carrier ES
A liquid, self emulsifying, nonphenolic, nontoxic, dyeing adjuvant for polyester, triacetate, and other synthetics. It is stated that it produces a maximum depth of shade and is economical to use.

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POLYMER INDUSTRIES, INC
Springdale, Conn
and
POLYMER SOUTHERN DIV
Greenville, SC

Adhesive 1788
A high solid, water-soluble adhesive designed for adhering a wide variety of synthetic fabrics including polyester fibers to rubber blankets on automatic screen printing machines.

Backing Compound 1826
An aqueous backing which produces a tough, dry, flexible film and is recommended by the manufacturers for coating cotton, and a wide variety of synthetics including polypropylene fabrics. It is said to be excellent for upholstery and seat cover materials.

Emulsion Concentrate 1734-R8
A cold water-dispersible, one-piece thickener to be used as a base for oil-in-water emulsions especially designed for printing azoic and soluble vat type dyes.

Polygum 262 LV
A dry, cold water-soluble printing thickener of low viscosity, enabling high solids thickeners to be prepared which are said to produce prints with sharp

marks and outlines on cotton, polyester and all types of synthetic fabrics.

Polyfilm B-2
A new polymeric resin used for improving the adhesion and film strength of starch and starch derivatives for warp sizing of synthetic fiber blends. Readily removable in standard finishing operations.

Polyfilm B-3
A new resin copolymer to be used as an additive to CMC for improving its adhesion to various synthetic and natural fibers in the warp sizing operation. The product is readily removable in standard finishing operations.

Polyfilm PP
A new polymeric resin recommended by the manufacturers for warp sizing filament and/or spun polypropylene yarn. This product is readily removable in standard finishing operations.

Polysoftener 411
A 35% active cationic softener said to be outstanding for its use in formulas requiring a wide pH range, and is compatible with practically all optical bleach agents.

Polysoftener 810M
A 100% active cationic softener which is said to have excellent stability over a wide pH range and is compatible with a wide variety of optical bleach agents.

Polysoftener NI-880
A 100% active nonionic softener said to have excellent compatibility with organic and inorganic catalysts, producing excellent lubricity and resistance to yellowing at high curing temperatures.

Polyresin E1811
An aqueous emulsion of a medium to high molecular weight epoxy resin, useful as an additive in resin formulation to give specific adhesion to difficult synthetic fibers. This product also has plasticizing action on a wide variety of thermosetting and thermoplastic resins.

Polyresin 1816
An aqueous emulsion resin used as an additive to vinyl resins, acrylic resins and nitrile binders to prevent migration of these resins in finishing and/or nonwoven applications.

Polyropel WT
A durable, nonionic, thermosetting type water repellent for use on a wide variety of fabrics from cotton to synthetic blends.

Polyvinyl Acetate Emulsion #10
A vinyl emulsion for a wide variety of adhesive and finishing needs where tough film characteristics are essential.

Polyvinyl Acetate Emulsion #20
A vinyl emulsion resin specially designed to be used either alone or with hot starch solutions for finishing. Excellent film transparency and compatible with a wide variety of general finishing materials is claimed.

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PROCTER & GAMBLE DISTRIBUTING CO
PO Box 599
Cincinnati 1, O

Proxocream*
A nonionic non-yellowing fatty ester base softener, lubricant and antistatic agent said to possess superior sewability and compatibility with other chemicals.

Zyrol*
A preparation and dyeing assistant said to possess good alkali stability, excellent rinsibility and strong suspending power. Excellent for suspending oil and wax.

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PUTNAM CHEMICAL CORP
Beacon, NY

Fixapret* CP Liquid
A bifunctional, reactant type resin for wash and wear articles where low chlorine retention is required. It is also most suitable for embossed, Schreiner, plissé and chintz finishes and for use in combination with other finishing processes. Fixapret CP Liquid is a clear, aqueous liquid of neutral pH miscible with water in all proportions. It is stated that it produces no unpleasant odors, does not recrystallize, has unlimited stability, does not cause yellowing, does not affect the lightfastness of dyes, including fiber reactives. The new resin is said to have outstanding durability to continued washing operations even at high temperatures.

Fixapret* 140
A polymethylol derivative of acetylene- diurea, reactant type compound for resin finishing of cellulosic textiles. It can be used for shrink-resistant finishes, minimum-iron articles, embossed and glazed effects and other purposes. This product is a clear, almost colorless, aqueous solution of neutral pH miscible with water in all proportions. It is stated that it has unlimited stability, does not recrystallize, produces permanent effects, is compatible with all finishing agents, has only a slight tendency to retain chlorine and has, like Fixapret CP Liquid, no harmful effect on the lightfastness of dyestuffs, including fiber reactives. It is claimed that phototropic behaviour so often observed in resin finishing of materials dyed with direct Turquoise Blues can be avoided using Fixapret 140.

Palanil* Carrier A
This product is an aromatic ether type compound recommended by the manufacturers for use as a carrier for applying disperse colors in general and Palanil dyes in particular to polyester fibers or their blends. It is a faintly yellowish, viscous liquid, free of water, odorless and nontoxic. Palanil Carrier A is said to be completely soluble in hot water and, therefore, eliminates carrier spotting and does not impair the shade or lightfastness of dyeings, as it is readily removed from the fiber by post scouring treatments.

Primasol* FP
Primasol FP represents an entirely new approach in the field of padding assistants for piece good dyeing with resin-bound pigment and vat colors, particularly low migrating types. The product is an anion-active liquid compound of neutral pH, readily soluble in water. It is stable to hard water, alkalies and acids in the concentration usually employed in textile plants. Primasol FP is particularly recommended by the manufacturers to reduce or prevent migration in padding operations involving vat dyes or pigments. It is said to produce excellent surface levelness and penetration and to develop a high wetting action. Primasol FP, when applied by the pad-jig method enables dyers to dye even heavy cotton duck material in the loom state with vat colors giving complete penetration and levelness. In conjunction with Basacryl P, it also is said to yield excellent results in vat package dyeing by the pigmentation process. The pigmentation is entirely equal throughout the package and the exhaustion of the pigmentation bath reaches up to 75%, thus avoiding shadiness from inside to outside and cross-overs.

Uniperol* AN
A non-surface-active, quaternary ammonium compound for use in the dyeing of acrylic fibers with Basacryl dyes or other basic or cationic types. It is a light brown, clear, somewhat viscous liquid of neutral pH and is completely soluble in hot or cold water. Although Uniperol AN has affinity for acrylic fibers, it does not cause "blocking" while effectively leveling (not retarding) cationic dyes. It is said to be effective in the presence of either acetic or sulfuric acid and is stable to hard water. The use of Glauber's salt and Basacryl Retarder G further enhances the leveling properties. Uniperol AN does not affect the fastness properties, handle or other technological properties of the fiber.

Uniperol* W
An auxiliary for use in dyeing wool and wool blends of polyester, acrylic and polyamide fibers with combinations of metal complex or disperse or cationic dyes. It acts as a dispersing and leveling agent and protective colloid and is said to improve the fastness-to-crocking of dyeings. The product has no clouding point and develops its full protective colloid and dispersing action also at temperatures above the boil. Uniperol W is, therefore, especially suitable for high pressure dyeing of polyester fibers. Uniperol W is a brownish paste readily soluble in hot water (with no turbidity point), and yields clear solutions with a practically neutral reaction. It is said to be stable to acids, alkalies, hard water and metallic salts. Uniperol W is anion-active but does not normally form co-precipitates with cationic type products.

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QUAKER CHEMICAL PRODUCTS CORP
Lime & Amerds Sts
Conshohocken, Pa

Quaker Dianol* AW
This product is recommended by the manufacturers for the scouring of wool and blended sweater fabric. It is said to provide efficient scouring action under neutral or acid conditions and also soften the fabric at the same time thus eliminating an additional processing step.

Quaker Dianol* SC
A new synergized surface-active agent that is said to be effective in most textile applications. Caustic, bleach, or desizing agents do not interfere with its wetting action. It is supplied as an easily dispersible liquid.

*Registered trademark

*Registered trademark

Quaker Dianol* SLF
A new synergized surface-active agent which has the added advantage of low foaming. It is stable in peroxide bleach baths and alkalinity does not detract from its wetting characteristics. The product is supplied as an easily dispersible flowable gel.

Quaker Reactant* 475
A patented low odor product which is recommended by the maufacturers as a cotton finish for wash-wear effect. The product is low in chlorine retention and will not yellow treated fabric. It is said to provide a high Monsanto crease angle with a minimum tensile strength loss.

Quaker Velvetol* FMC
A newly-developed toweling softener which is said to have the unique advantage of maintaining rewetting properties of fabric no matter how much is added. The product is claimed to produce much more hand than most rewetting softeners and also is low in yellowing characteristics. It is supplied as an easily dispersible off-white paste.

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REFINED PRODUCTS CO
Lyndhurst, NJ

Catalyst 430
A buffered metallic salt catalyst developed especially for use with wash and wear resins. It accelerates the curing rate of the resin without affecting the bath life.

Dacar
A nonphenolic carrier for dyeing Arnel, Dacron, and related fibers & blends. It is said to assist in level dyeing with excellent color yield and to promote deep penetration and prevent bleeding on wet pressing and processing.

Kara-Cide 422
A 100% active fungicide used to prevent mildew growth and bacterial damage on textile sizings & finishes, glues & adhesives and paint & leather products.

Karasan 43
An aqueous dispersion of octadecyl dimethyl benzyl ammonium chloride used as a textile softener, emulsifier, antistatic agent, lubricant and release agent.

Kara Set 100
A wash and wear resin which is said to impart excellent crease resistance and dimensional stability with exceptional chlorine resistance and durability.

Kara Set 200
A cross-linking agent developed to impart a premium shrinkage controlled and chlorine resistant finish on rayon and rayon blends. It reduces progressive shrinkage to a minimum.

Karasol 47
An anti-dusting and non-caking agent for dyestuff, pigments, clays, etc. It also serves as a dispersant and emulsifier.

Perma Kleer 95
A sequestrant which forms stable complexes wth iron, copper and manganese in caustic scouring, boil off and kier boiling operations.

Perma Kleer 312
A sequestrant recommended for chelating metal ions like copper, iron, and manganese in peroxide, Textone and other oxidizing media.

Perma Set 960
A methylated urea formaldehyde resin in syrup form that is said to give a durable, resilient hand with a minimum mark-off on rayon and acetate blends. It can be used alone or with other resins to produce a variety of hands & finishes on rayon and other synthetic fibers.

Perma Set 1300
A methylated resin that is said to impart to fabrics a soft mellow hand and give good wrinkle recovery and shrinkage control. It can be used for embossed, schreinered, and calendered finishes. It can be used as a body builder and hand modifier in many finishes.

Perma Silene 229
A cationic emulsion of silicone resins designed for use as a water repellent on textile fabrics. It is applied by exhaustion processes on wool, acetate, viscose, nylon, and other synthetic fibers; and cured at low temperature.

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RICHMOND OIL, SOAP & CHEMICAL CO, INC
1041-1043 Frankford Ave
Philadelphia 25, Pa

Cleaner S-1015
A combination needle and sinker cleaner along with an all purpose machine cleaner for use on circular knitting machines and on full-fashioned sweater machines.

Coning Lubricant 2112
A coning oil said to possess excellent antistatic and lubricating properties designed primarily for oiling unsized nylon and Dacron yarns after texturing, for filling yarns when weaving, and particularly for preshrunk hosiery welt yarns.

Needle Cleaner 2011
A needle cleaner particularly designed for machines knitting with latch needles. It is said to do an exceedingly fine job when knitting in conjunction with rubber where it is desirous to remove talc and flock that has accumulated in the latches from the rubber.

Nylsoft
A nonionic compound for use in the last rinse after package dyeing which will enable yarn to be rewound or knit so as to provide good lubrication on the yarn. Also can be applied in a diluted form from an emulsion trough in a yarn winding operation.

Richolube
A finely dispersed cationic emulsion designed to give added softness in the finish bath for women's nylon hosiery. Also acts as an excellent board lubricant.

Rubberknit 300
A completely synthetic lubricant to be used in oiling synthetic or natural thread or raw rubber when a completely compatible rubber oil is desired to prevent degradation and deterioration of the rubber. Can also be used as a needle lubricant on knitting machines when knitting yarn in conjunction with rubber so as to prevent rubber degradation.

Scoursoft 3055
A combination of cationic finish and nonionic scouring agent which will effectively wash and soften wool, wool blends, and wool and synthetic blend fabrics in one operation.

Scourpen 3099
A completely nonionic detergent designed primarily for the scouring of wool and wool blend fabrics to remove oils and natural greases down to an extremely low residual percentage.

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ROHM & HAAS CO
Washington Square
Philadelphia 5, Pa

Acrysol* 51
A 10% solids water-soluble acrylic resin designed specifically as a thickener for synthetic latices.

Rhoplex* HA-8
A 46% solids self-crosslinking acrylic emulsion polymer, offering maximum softness, drapeability, washfastness and dryclean fastness.

Rhoplex* HA-12
A 46% solids self-crosslinking acrylic emulsion polymer, offering maximum stiffness, washfastnes and dryclean fastnes.

Rhozyme* 135C
A concentrated high strength liquid diastase for textile desizing.

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SCHOLLER BROTHERS, INC
Collins & Westmoreland Sts
Philadelphia 34, Pa

Brosco* Tex S
A highly effective scrooping agent for synthetic and natural fibers. Particularly useful on tricot constructions and tufted fabrics. Modifications available to give varying degrees of softness.

Creamoyl* T and Creamoyl* HL
Products resulting from a continuing development program to yield softeners of outstanding performance on natural and man-made fibers. Creamoyl* T is recommended by the manufacturers for exhaust methods of application and Creamoyl* HL for pad applications. Either may be used on package or beam applications.

Dura Beau DMX
A resin emulsion hosiery finish said to impart a full, flexible hand with dullness and snag resistance. Effective on all systems of hosiery processing.

Ingra Tex GR and Ingra Tex GRM
Hosiery finishes said to impart softness with a luxurious degree of smoothness. Also facilitate stripping hosiery from forms or prevent hosiery from sticking together in tray drying. Particularly effective when used in conjunction with Dura Beau DMX.

Tri-A-Mine SS
A combination scour and dyeing assistant that is said to have excellent dye retarding and dye leveling properties, to promote dye penetration and to impart a soft hand to the goods. It is particularly applicable to the dyeing of wool and wool/fur blends.

*Registered trademark

Unitone SR
A one-bath scour and dyeing assistant for seamless nylon hosiery that is said to combine excellent scouring and dyeing properties with good "graphite" soil removal characteristics.

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SHAWINIGAN RESINS CORP
Springfield 2, Mass

Butvar* Resins D-564 and 565
0% and 5% plasticized dispersions of polyvinyl butyral which are used as both fabric and thread finishing agents, abrasion resistant coatings, and non-woven binders.

Gelva* Emulsion TS-100
A copolymer emulsion of vinyl acetate and long-chain acrylate that is said to be a textile finishing agent and nonwoven binder of excellent washfastness and soft hand.

Gelva* Powder 700
A spray-dried polyvinyl acetate emulsion, made under a patented process (US 2,800,463) that is used as an adjunct to the finishing bath to raise solids and also as a dry binder for nonwovens.

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SOLUOL CHEMICAL CO, INC
Green Hill & Market Sts
Natick (West Warwick), RI

Aquagard-105
A nonionic silicone water-repellent designed specifically for cottons which is said to impart both durability to high temperature washing and durability to dry-cleaning, and may be used as a "pure-finish" or in conjunction with conventional resins.

Aquagard-110
A nonionic silicone water-repellent designed for use on woolen or worsted fabrics by padding application which may be cured at relatively low temperatures.

Aquagard-115
A nonionic silicone emulsion for application to woolens and worsted fabrics by an exhaustive system to produce a durable water-repellent finish resistant to repeated dry-cleanings.

Aquagard-120
A nonionic silicone water-repellent designed for use on synthetics particularly where curing at relatively low temperatures are necessary or desirable.

Aquagard-125
A nonionic silicone emulsion for application by spray method to deep pile fabrics where durable water-repellency, spot and stain resistance and a smooth luxurious hand are desired.

Examide-PVZ
A nonionic surfactant said to be effective as a scouring, leveling, and wetting agent on such fabrics as Acrilan and blends of the same with wool.

Examide-RT
An ethylene oxide condensate of high molecular fatty alcohols said to be effective as a scouring, leveling, and wetting agent on Orlon, wool, cotton, rayon, and blends of the same.

*Registered trademark

Solucene-T
An anionic softener and finishing agent designed especially to impart a soft, lofty hand together with high absorbency to terry cloth and towellings.

* * *

SOU-TEX CHEMICAL CO, INC
Mount Holly, NC

Casservol† RW
An anionic dyeing assistant which is said to enable the dyeing of cotton and linen fabric, yarn and sliver in the grey without previous treatment giving a smooth surface appearance and best possible penetration. It is also recommended by the manufacturers for dyeing insufficiently or not uniformly boiled-off fabrics. It may be used in jig, pad-jig and machine dyeing. The product gives the optimum wetting and penetrating effect at cold temperatures and by eliminating the boil-off saves time and costs. The natural fats and waxes of cotton are said to be preserved giving a smooth surface appearance free from neps. The hand is also fuller and the loss in weight is noticeably smaller. The product causes no undesired formation of foam or unpleasant smell and does not alter the fine dispersion of highly dispersible vat colors.

Cassofix* 4509
Liquid, cationic dyefixing agent for cotton and rayon dyeings. It is said to possess a very low affinity for the fiber which is of particular advantage when aftertreating dyeings in package, beam and raw stock machines as the effect is uniform throughout the material. It is stated that harshness is not imparted and further processing is facilitated. The product is said to be completely insensitive to sulfates which eliminates poor crocking due to precipitation caused by residues from dyeing. Lightfastness values of dyeings are maintained to a high degree and there is no influence on the shade. For printing purposes the product is said to be completely dischargeable and may be used in the same bath with dyeing assistants usually used to prevent facing.

Fibramoll* CNS
Cationic softening and lubricating agent for aftertreatment of cotton and synthetic fibers. Especially effective on acrylic yarns and fabrics. May be used in the same bath with optical bleaching agents and dye fixing agents with which it has complete stability. It is stated that it will not yellow whites and change the shade of dyeings. The product is liquid and completely dispersible in cold water. It is also produced in 100% form which may be dissolved in warm water.

Pentex BLN
Chelating agent with a specific complex binding capability for tri-valent iron and other metal ions; especially at high pH. For .1 grams of trivalent iron, 1.5 grams of the product are required at pH 11 and 20°C.

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A E STALEY MANUFACTURING CO
Box 151
Decatur, Ill

Oxytrol Warp Sizing Starch
A low BOD warp-sizing starch that is cold-water swelling, thin-boiling and non-congealing. It is said to have some 70% less biochemical oxygen demand than regular starch sizes. Because it provides better weaving protection, it can be used at considerably lower add-on levels.

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STANDARD CHEMICAL PRODUCTS, INC
Hoboken, NJ — Charlotte, NC

Standafin* 41
A new gum type product used as a hand builder on cotton. A firm, full hand is imparted with good surface smoothness. This product is compatible with thermosetting resins, softeners, and other type finishing materials.

Standafin* 840
A modified polyethylene type softener for cotton. It can be used in combination with other finishing materials, including thermosetting resins, or as a top softener. Good softness, lubricity, and sewability are said to be imparted, along with improved tear strength and abrasion resistance. This product is readily soluble in hot or cold water having good stability to heavy metal salts in solution.

Standafin* WP-23
A waterproofing agent for tentage said to yield good hydrostatic pressure results. Good compatibilty with the nonionic dispersed pigment padding colors permits dyeing and finishing in one operation.

Stantex* 461
A nonionic type softener for cotton. It can be used in combination with other finishing materials, including thermosetting resins, or as a top softener. It is said to exhibit good softness, whiteness, sewability, ease of solubility, and stability to heavy metal salts in solution.

Stantex* NSP #856
An antistatic oil especially designed for nylon yarn coming in contact with rubberized thread. Maximum lubricity is claimed to be imparted without affecting the strength or modulus of the rubber.

Stantex* 716 B
An absorbent softener for toweling which is said to impart a soft, lofty, resilient hand, excellent whiteness characteristics, and a good ground for printing.

Stantex* 865
An anionic material used as a dispersing agent for pasting vat and sulfur colors.

Stantex* 2902
A soft, film-forming warp size for Dacron filament yarn which is to be woven with a rubberized acetate filling. High weaving efficiency is claimed to be obtained with no deposits on the guides or heddles. This product is easily scoured out on a jig.

Stantex* 2908
A soft, film-forming warp size for acetate filament yarn. This product is designed to be used in warp sizing formulations for slashing acetate filament yarn with an off-the-loom finish. It is reported to impart increased tear strength and anti-raveling properties.

†Trademark applied for
*Registered trademark

*Registered trademark

Stantex* 2911
A soft, film-forming warp size for Dacron filament yarn. High weaving efficiency is said to be obtained with no deposits on the guides or heddles.

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SUN CHEMICAL CORP
WARWICK CHEMICAL DIV
Wood River Junction, RI

Catalyst X-10
Catalyst for thermosetting resins for use in chlorine resistant finishes of minimum odor potential.

Mykon* C1
A 25% active cationic softener, applicable to all fibers, alone or in resin formulations. Non-chlorine retentive.

Mykon* 454
A cationic softener which is said to be soluble and stable in dilute salt solutions. May be applied with salt in last rinse after dyeing.

Mykon* 463
A nonionic softener paste, applicable to all fibers and especially useful in chlorine resistant formulations. It is said to be nonyellowing, non-scorching, non-chlorine retentive. Compatible with all types of resins and metal salt catalysts.

Permafresh* 197
A 45% active aqueous thermosetting resin for use as a durable chlorine resistant "wash-wear" finish on cotton goods. Product has extremely low odor potential.

Permafresh* 462
A 45% active aqueous thermosetting resin designed for use where maximum durable chlorine resistant "wash-wear" finishes on cotton goods are desired. Product has low odor potential.

Permafresh* 465
A liquid, reactive, thermosetting resin of 30% non-volatile solids. It is designed for shrinkage control and crease resistance at low cost with extremely low odor potential.

Permafresh* 474
A 50% active aqueous carbamide resin of very low free formaldehyde content; it is said to give minimum odor in finishing plant and on treated cloth. It is further said to provide durable crush resistance and shrinkage control on cellulosic fibers and to give resilient stiffness on cellulose acetate, nylon and other hydrophobic fibers. The product has little effect on lightfastness of dyed or printed cottons.

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SYNTHRON, INC
Ryan Ave
Ashton, RI

Alvarez N
Shrinkproofing, crease resistant finish, resilient hand. It is a modified UF-resin paste.

Aqua Shed
Designed to produce durable water repellency for cotton and synthetics. It is a fiber reactant resinous emulsion.

Carboset
A crosslinking agent with thermosetting resins to increase bulk and body resistant to dry-cleaning. It is a water-soluble polycarboether.

Catalyst BN
A curing agent for thermosetting resins. It is a magnesium-complex.

Catalyst NOCL
A curing agent for thermosetting resins. It is a zinc-complex.

Cellusoft P
A nonionic softener and lubricant for wash-wear finishes. It is polyethylene emulsion.

Chemrez BN
A shrinkproofing and crease resistant finish which is said to provide a soft hand. It is a modified UF-resin paste.

Chemrez N
A shrinkproofing, crease-resistant finish which produces a stiff finish on hydrophobic materials. It is a modified UF-resin.

Chemrez X-Cel
A shrink- and crease-resistant finish which produces a soft hand on hydrophylic materials and a stiff hand on hydrophobic materials. It is a modified UF-resin liquid form, low free formaldehyde.

Chemrez X-Cele
A shrink- and crease-resistant finish with a soft hand. It is a modified carbamid resin low free formaldehyde.

Defoama
A defoaming, lubricant and antistatic agent. It is a silicone complex.

Dyeset R
A dye-fixative for direct dyes. It is a cationic resin in liquid form.

LX-549
A durable stabilization agent with a high degree of resilience and a minimum amount of tensile strength loss. It is a fiber reactant UF-resin.

Melrez MC
A crease-proofing, shrink-proofing, chlorine resistant non-yellowing, drip-dry and minimum care finish. It is a modified triazine-formaldehyde resin.

Melrez* MF
A crease-proofing and shrinkage-control agent which produces durable, glazed finishes. It is a triazine-formaldehyde complex.

Non-Set A
A nonionic softener which is said to be non-yellowing and resistant to chlorine pick up. It is a fatty-glyceride complex.

Resin NOCL
A shrinkproofing and crease-resistant finish which is said to be chlorine resistant and to have no odor. It is a modified cyclic carbamid resin.

Softset
A cationic softener. It is a fatty acid amide condensation complex.

Softset L
A cationic softener. It is a fatty acid amide complex in liquid form.

TEXIZE CHEMICALS, INC
P O Box 1820
Greenville, SC

Tex-Wet 1001
A 70% active anionic surface active agent used as a high-speed wetting and rewetting agent for desizing, bleaching, dyeing, scouring and compressive shrinking.

Tex-Wet 1002
A phosphated long chain alcohol used as a wetting agent, dyeing and desizing assistant.

Tex-Wet 1004
A modified alkylarylsulfonate used as a wetting agent, scouring and dyeing assistant-detergent.

Tex-Wet 1005
An ammonium alkylarylsulfonate used as a wetting agent, scouring and dyeing assistant.

Tex-Wet 1009
A modified low-foaming phosphated long-chain alcohol used as a wetting agent, dyeing and desizing assistant.

Tex-Wet 1011
An anionic blend used as a softener with good wetting, rewetting and softening properties.

Tex-Wet 1012
A sulfated fatty ester used for rewetting, wetting, dyeing assistant and softener.

Tex-Wet 1016
A blend of sulfated mineral oils and unsaponifiable oils used as a Sanforizing assistant and a softener for cottons.

Tex-Wet 1018
A blend of sulfonated mineral and vegetable oils, with a wetting and rewetting agent. It is used as a softener and lubricant for cottons.

Tex-Wet 1023
A blend of sulfated fatty ester derivatives used as a softener with good softening and rewetting properties.

Tex-Wet 1024
A modified sulfated triglyceride which finds use as a softener with good rewetting properties.

Tex-Wet 1025
An anionic non-yellowing softener for cottons which is said to give fullness, lubricity and good sewability to the fabric.

Tex-Wet 1027
A nonionic non-yellowing softener for all fibers and fabrics which is said to impart the desirable fullness, lubricity and sewability.

Tex-Wet 1034
An anionic softener for cotton yarns and fabrics. The softener is said to impart a full hand and good lubricity. Recommended by the manufacturers as a towel finish where softening and rewetting properties are essential.

Tex-Wet 1042
A sulfated triglyceride used as a softener and finishing agent.

*Registered trademark

Tex-Wet 1043
A sulfated nonionic surface-active agent which can be prepared in various activities and blends. The product is said to be an excellent detergent, wetting agent, dyeing and desizing assistant.

Tex-Wet 1045
A 30% active nonionic surface-active agent with high wetting, rewetting and detersive properties. It is used as a dye leveling agent, desizing and soaping-off assistant.

Tex-Wet 1046
A blend of a nonionic surface active agent with an antislip agent. This product finds use for increasing tensile stengths of yarns and fabrics.

Tex-Wet 1048
A nonionic polyethylene emulsion which is nonchlorine retentive and nonyellowing. It is compatible with a wide range of catalysts and resins. It is useful as a lubricant, finishing agent and fabric softener.

Tex-Wet 1049
A 98-100% active nonionic, nonyl phenol ethylene oxide condensate, surface-active agent. It is useful as a detergent, desizing assistant, wetting agent, leveling agent for direct dyes and resin finish penetrant.

Tex-Wet 1054
A modified fatty acid amine condensate used as a wetting, emulsifying and dispersing agent, detergent, and fulling agent.

Tex-Wet 1069
A liquid cationic substantive softener which is claimed to impart a most desirable nongreasy hand to fabrics with good rewetting properties.

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VERONA DYESTUFFS
Springfield Rd
Union, NJ

Levegal* D
Represents a new highly effective carrier for dyeing polyester and triacetate fibers. The outstanding features are said to be quick dispersibility, simplified dyeing procedure, uniform exhaust in combination shades, practically no shade change, superior penetration, no effect on lightfastness, improved crocking, wash, and sublimation fastness, and non-yellowing properties.

Phorwite* BBU Extra Powder
Phorwite* BBN Solution
Phorwite* BBT Extra Powder
Represent a new brightening agent for cellulosic fibers of neutral shade which is said to distinguish itself by exceptional solubility. It is stated that this brightener is compatible with most commonly used resins and its very good washfastness makes it particularly suitable for application in discharge printing. This brightening agent is not sensitive to hard water, in fact, its exhaust is favored by electrolytes.

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VIKON CHEMICAL CO
Box 277
Elon College, NC

Plion S-100
Claimed to be a highly efficient polyethylene emulsion for improving tear strength, abrasion resistance and sewing in resin finishes on cotton and synthetic fabrics. It is said to have resistance to soil pick-up on finished fabrics during laundering.

*Registered trademark

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WICA CHEMICALS, INC
P O Box 506
Charlotte, NC

Wicapad ZG-23-N
Pad dyeing binder emulsion for water phase pigments said to possess excellent tests to crock, colorfastness in dry cleaning and AATCC #3 and #4.

Wica Carrier
A 100% active, self-emulsifying phenolic type carrier for dyeing of polyester and nytril fibers blends.

Wica Carrier AR
A 50% active methyl salicylate emulsion carrier with precision modifications for polyester and triacetate fibers and blends.

Wica Carrier AK
A 50% active emulsion carrier designed for maximum efficiency in dyeing polyester and triacetate fibers and blends.

Wica Carrier P
A 100% active self emulsifying modified phenolic carrier said to possess optimum effectiveness in dyeing and stripping polyester fibers and blends.

COLORING MATERIALS

ALLIANCE CHEMICAL CORP
33 Avenue P
Newark 5, NJ

Azoene* Fast Red KB Salt Special
The first salt of a new series of Azoene Fast Color Salts designed to provide extended useful life of the salt in storage and of the salt in solution as prepared for coupling. This series of "Special" salts will not require the addition of any auxiliary to the make-up tank. It is claimed that, at no extra cost the "Special" salts will:

(1)—Give cleaner, brighter shades
(2)—Markedly improve crockfastness
(3)—Protect and extend the life of diazo solution
(4)—Extend the useable life of the Azoene Fast Color Salt in stock
(5)—Provide instant wet out of the Azoene Fast Color Salt
(6)—Improve penetration in padding
(7)—Ease the chore of machine clean-up.

Azoene* Fast Scarlet GC Base
Clean, light colored, free flowing crystals of Azoene Fast Scarlet GC Base are said to provide the user with an easy to handle, readily diazotizable form of Fast Scarlet G Base.

*Registered trademark

ALTHOUSE CHEMICAL CO
Reading, Pa

Cekryl* Yellow 2GFL
A bright greenish-yellow, especially recommended by the manufacturers for polyester and triacetate fibers. It is stated that it has very good lightfastness, is excellent to washing and sublimation and reserves viscose and cotton. It is non-tarring and recommended for high temperature dyeing.

Cekryl* Yellow RFC
A clear, reddish-yellow, especially recommended by the manufacturers for polyester and triacetate fibers. It is stated that fastness to light and sublimation are excellent, fastness to washing is very good. Viscose and cotton are very lightly tinted. It is non-tarring and recommended for high temperature dyeing.

Cekryl* Orange L
A clear, reddish-orange with excellent build up on polyester and triacetate fibers. Fastness to light and sublimation are reported to be excellent, fastness to washing, very good. Viscose and cotton are very lightly tinted. It is non-tarring and recommended for high temperature dyeing.

*Registered trademark

Cekryl* Red BB
A bright, bluish-red said to have very good fastness to sublimation. It is especially recommended by the manufacturers for polyester and triacetate fibers where light and washing fastness is of prime importance. It is non-tarring and recommended for high temperature dyeing.

Cekryl* Violet R
A reddish-violet especially recommended by the manufacturers for polyester and triacetate fibers. It is stated that it has good fastness to light, washing, and has excellent fastness to sublimation. It is non-tarring and recommended for high temperature dyeing.

Cekryl* Blue LF
A blue of greenish tone especially recommended by the manufacturers for polyester and triacetate fibers. It is stated that fastness to sublimation and light is excellent, fastness to washing is very good. It is non-tarring and recommended for high temperatures dyeing.

Lanafast* Orange RDL
A neutral dyeing premetallized orange said to have excellent fastness to light. Wet fastness properties are also said to

*Registered trademark

be excellent. Especially recommended by the manufacturers for wool, polyamide and modified acrylic fibers.

Lanafast* Bordeaux RLL
A neutral dyeing premetallized bordeaux said to have excellent fastness to light. It is stated that it has excellent tinctorial strength and wet fastness properties, Especially recommended for wool, polyamide and modified acrylic fibers.

Lanafast* Rubine BFL
A neutral dyeing premetalized Rubine especially recommended by the manufacturers for wool, polyamide and modified acrylic fibers, where excellent fastness to light is required. Tinctorial strength is very good and wetfastness properties are excellent.

Lanafast* Violet BBL
A neutral dyeing premetalized bluish violet said to have very good fastness to light and excellent wetfastness properties. Especially recommended by the manufacturers for wool, polyamide, and modified acrylic fibers.

Lanafast* Brown 4RFL
A neutral dyeing premetalized reddish-brown said to have outstanding fastness to light and excellent wetfastness properties. It is especially recommended by the manufacturers for wool, polyamide, and modified acrylic fibers where maximum fastness to light is required.

Lanafast* Brown DBL
A neutral dyeing premetalized taupe brown especially recommended by the manufacturers where maximum fastness to light is required on wool, polyamide, and modified acrylic fibers. Wet fastness properties are said to be excellent.

Lanafast* Black NBG
A neutral dyeing premetalized black recommended by the manufacturers for wool, polyamide, and modified acrylic fibers. A minimum of dyeing time is said to be required to obtain excellent wetfastness properties and excellent fastness to light.

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AMERICAN CYANAMID CO
Bound Brook, NJ

Calcodur Resin Fast Blue 3G

A greenish-blue said to be of excellent fastness when treated with permanent resin finishes. Suitable for automotive fabrics and similar uses where maximum fastness is required

Calcofast Neutral Red G
A true red shade neutral dyeing metalized dye for wool, nylon and certain acrylic fibers. Suitable for dyeing under neutral dyeing conditions or under acid conditions with Calco Leveling Salt LV.

Calcofluor White AT
A blue fluorescing rapid exhausting cellulosic brightener which can be applied over a wide range of pH conditions.

Calcoloid Brown GN Double Paste
A superior formulation of Vat Brown PR 380 particularly suitable for pad steam dyeing, Maximum levelness is said to be obtained without sacrifice in color yield.

Calconyl Black 2G Single Solution
A deep jet black stabilized azoic dye for printing. Development by acid aging is recommended.

Calconyl Brown IPT Single Solution
Claimed to be an excellent brown of superior fastness for printing by the usual procedure for stabilized azoic dyes which are developed by acid aging.

Calconyl Orange R Double Solution
A brilliant stabilized azoic orange for printing and developing by conventional acid aging methods.

Calconyl Yellow 2GNC Single Solution
A bright lemon yellow stabilized azoic dye for printing. Suitable for producing green shades with Calco Soluble Vat Jade Green by the acid aging procedure.

Calcosperse Blue B
Calcosperse Blue 3R
Calcosperse Brilliant Orange 2R
Calcosperse Orange 3RD
Calcosperse Red 2R
Calcosperse Scarlet 2G
Calcosperse Yellow GL
Calcosperse Yellow 4RL
A line of disperse dyes for dyeing polyester fibers by the carrier method or at high temperatures without carrier. Excellent fastness and practical dyeing characteristics are said to be exhibited.

Calcozine Acrylic Blue G
Cailcozine Acrylic Red 3G
Calcozine Acrylic Yellow G
Calcozine Acrylic Yellow 2R
Calcozine Acrylic Violet 3R
Claimed to be a superior line of cationic basic dyes of excellent fastness on acrylic fibers. Without the use of retarders level dyeings are obtained by simplified dyeing procedures.

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ANSBACHER-SIEGLE CORP
Division of Sun Chemical Corp
Staten Island, NY

Ansigen* Black KI Solution
Ansigen Black KI is an azoic color formulated to produce jet blacks said to possess outstanding fastness properties, completely resistant to formaldehyde and can be run along side resin-bonded pigments. Ansigen Black KI Solution (as all products in the Ansigen Series), can be applied in the conventional starch vehicles and also in emulsion systems.

Ansigen* Brown RB Solution
Ansigen Brown RB is a yellow cast brown said to possess excellent fastness to light and resin after-treatment. Ansigen Brown RB is said to be completely resistant to formaldehyde and can be used in patterns along side resin-bonded pigments.

Ansigen* Red G Dbl Solution
Ansigen* Red B Dbl Solution
Ansigen* Scarlet R Dbl Solution
These three azoic colors are formulated to produce self shades of high tinctorial value and good all around fastness properties. Also, blends in any proportion to obtain a complete range of shades from yellow cast scarlets through blue shade reds can be produced with no sacrifice in brilliance or fastness.

Ansigen* Violet B Solution
Ansigen Violet B Solution is an azoic color designed to produce brilliant blue toned violets. This color is one of the most desirable of the new fall shades.

Suntone* "N" Series Dispersions
The "N" Series Dispersions are fine particle size nonionic dispersions of organic pigments designed for application in W/O formulations. These products are accurately standardized and are said to have excellent package stability. The colors available in this series at the present time are:
Suntone* Red NTR Dispersion
Suntone* Yellow N2R Dispersion
Suntone* Yellow N2G Dispersion
Suntone* Green NB Dispersion
Suntone* Brown NV Dispersion

Suntone* "K" Series Dispersions
The "K" Series Dispersions are fine particle size anionic dispersions of organic pigments designed for application in O/W formulations. This is a companion series to the "N" type. The same high degree of standardization control and package stability is offered in the "K" Series as well. The colors available in the "K" Series at the present time are:
Suntone* Red KTR Dispersion
Suntone* Yellow K2R Dispersion
Suntone* Yellow K2G Dispersion
Suntone* Green KB Dispersion

Suntone* F1 Yellow 2G
Suntone F1 Yellow 2G is a new resin-bonded pigment printing color said to possess excellent color yield and good all around fastness and running properties. Suntone F1 Yellow 2G is applied in a W/O emulsion vehicle. This product is said to exhibit high resistance to crocking when used in conjunction with Suntone Clear LC3415.

Suntone* Blue OSG
Suntone Blue OSG is a new resin-bonded pigment printing color exhibiting a particularly brilliant phthalocyanine blue shade. Suntone Blue OSG is applied in a W/O emulsion vehicle. It is stated that this product will provide excellent crockfastness when used in conjunction with Suntone Clear LC3415.

Suntone* Violet OS4Y
Suntone* Violet AS4Y
Suntone Violet OS4Y is a resin-bonded pigment printing color applied in a W/O emulsion vehicle. Suntone Violet AS4Y is a resin-bonded pigment printing color applied in an O/W emulsion vehicle. It is stated that both of these products display a brilliant rubine shade with good all around fastness and running properties.

Suntone* Clear LC3415
Elastomeric binder additive for W/O resin-bonded pigment printing systems. It is stated that Suntone Clear LC will provide excellent resistance to crocking, while maintaining all of fastness properties inherent in the color combinations used.

*Registered trademark

*Registered trademark

*Registered trademark

ARNOLD, HOFFMAN & CO, INC
55 Canal St
Providence, RI

Coomasie* Turquoise Blue 3GS

Particularly suited for application to loose wool and slubbing, and under optimum conditions for level dyeing, may be used in the dyeing of wool yarns.

Duranol* Dark Blue T-300 Powder Fine

A homogenous disperse dye of particular value as a basis for economical dark blue and navy blue shades on polyester fibers. It is stated that, unlike the majority of dark blue disperse dyes, when applied to synthetic fibers, Duranol Dark Blue T in full shades shows only a slight tendency to redden in artificial light. On polyester fibers Duranol Dark Blue T gives full blue shades said to possess very good fastness to light and adequate fastness to steam pleating. It is further said to possess excellent building-up properties on this fiber. It may be applied to loose staple fiber, slubbing, yarn, hosiery, and woven piece goods.

Duranol* Direct Black T Powder Fine

A disperse dye specifically recommended by the manufacturers for dyeing polyester fibers and their blends. It is suitable for application to yarn, hosiery, and woven piece goods. Duranol Direct Black T yields full neutral black shades said to possess very high fastness to light, good fastness to heat treatments, and good fastness to washing and wet treatments.

Procinyl* Rubine BS

The excellent buildup of this new member of the Procinyl range of disperse dyes for nylon and its complete compatibility with them, make it a suitable basis for brown, maroon, bordeaux, and violet shades, in addition to the deep rubines obtained in self-shades. It is stated that, because of its excellent washfastness, it is of particular interest for dyeing nylon uniform fabric, all forms of knitwear of the "Banlon" type, lingerie, and ladies' and men's hose. Other members of the Procinyl range are Procinyls Yellow GS, Orange GS, Blue RS, and Scarlet GS. As a class, when applied to nylon, the Procinyl dyes are said to show good coverage of irregular dyeing yarns and yield results possessing excellent temperature range properties and good penetration.

Procion* Yellow GRS
Procion* Brilliant Yellow H3GS
Procion* Brilliant Orange 2RS
Procion* Scarlet HRS
Procion* Brilliant Red 8BS
Procion* Rubine HBS
Procion* Brilliant Purple H3RS
Procion* Blue 3RS
Procion* Turquois HGFS

Procions Yelow GRS, Brilliant Orange 2RS, Brilliant Red 8BS, and Blue 3RS belong to the cold dyeing or fast reacting class of Procion fiber reactive dyestuffs. These are suitable for dyeing cellulose in all forms, and these in particular are said to possess excellent color value, together with very good fastness to the AATCC No. 4 wash test and chlorinated pool water. It is stated that Procions Yellow GRS and Brilliant Orange 2RS, in particular, because of their excellent resistance to bleaching agents and soda boiling, are recommended for dyeing yarns that are to be subsequently piece bleached.

Procions Brilliant Yellow H3GS, Scarlet HRS, Rubine HBS, Brilliant Purple H3RS, and Turquoise HGFS belong to the hot dyeing or slower reacting class of Procion fiber reactive dyes. Because of their excellent print paste stability, they are particularly recommended by the manufacturers for printing cellulose. It is stated that dyes possess very good color value and are outstanding because of the ease with which unreacted dyestuffs may be washed off without staining adjacent whites. They may also be used in dyeing applications by methods recommended for Procion "H" brands.

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*Registered trademark

ATLANTIC CHEMICAL CORP
153 Prospect St
Passaic, NJ

Acid Dyestuffs

Classification	*Atlantic Name*	*New Colour Index No.*
Acid Yellow 17	Atlantic Fast Light Yellow 2G	18965
Acid Yellow 44	Atlantic Milling Yellow 6G	23900
Acid Orange 8	Atlantic Orange RO Extra Conc	15575
Acid Orange 10	Atlantic Wool Orange G	16230
Acid Red 1	Atlantic Acid Red 2G Ex Conc	18050
Acid Red 4	Atlantic Acid Eosine G Conc	14710
Acid Red 14	Atlantic Acid Chrome Blue BA Ex Conc	14720
Acid Red 18	Atlantic Acid Scarlet 4R Conc	16255
Acid Red 27	Atlantic Acid Amaranth	16185
Acid Red 66	Atlantic Acid Scarlet BA	26905
Acid Red 73	Atlantic Brilliant Croceine Scarlet M	27290
Acid Red 85	Atlantic Milling Red G 125%	22245
Acid Red 89	Atlantic Acid Anthracene Red 3B Extra	23910
Acid Red 97	Atlantic Acid Anthrene Red G Conc	22890
Acid Red 99	Atlantic Milling Red PRX	23285
Acid Red 114	Atlantic Milling Red SWB	23635
Acid Red 151	Atlantic Silk Red 3B	26900
Acid Red 167	Atlantic Milling Red B	—
Acid Red 167	Atlantic Milling Red PBX	—
Acid Green 1	Atlantic Naphthol Green B	10020
Acid Black 41	Atlantic Acid Black SAW	20480
Acid Black 52	Atlantic Metallized Black WANA Conc	15711
	Acid-Mordant Dyestuffs	
Mordant Yellow 1	Atlantichrome Yellow 2G	14025
Mordant Yellow 3	Atlantichrome Yellow D Conc	14095
Mordant Yellow 14	Atlantichrome Yellow 3G	14055
Mordant Yellow 20	Atlantichrome Yellow RS Conc	14110
Mordant Orange 6	Atlantichrome Orange G Conc	26520
Mordant Red 5	Atlantichrome Garnet Y	14290
Mordant Red 7	Atlantichrome Fast Red B Conc	18760
Mordant Red 9	Alizarine Red B Ex Conc	16105
Mordant Violet 5	Atlantichrome Violet B Conc	15670
Mordant Blue 1	Atlantichrome Brill Blue B Conc	43830
Mordant Blue 3	Atlantichrome Cyanine RA Conc	43820
Mordant Blue 13	Atlantichrome Blue B	16680
Mordant Brown 13	Atlantichrome Brown 2R	13225
Mordant Brown 33	Atlantichrome Brown RH Ex Conc	13250
Mordant Black 5	Atlantichrome Black F Conc	26695
Mordant Black 17	Atlantichrome Blue Black RZN	15705
	Azoic Dyestuffs	
Azoic Red 6	Printing Red GSB	
Azoic Red 15	Printing Red FFBB	
Azoic Red 16	Printing Bordeaux BN	
Azoic Blue 3	Printing Blue GN	
Azoic Blue 4	Neutrazoic Navy Blue FFR	
Azoic Blue 4	Printing Navy Blue FFR	
Azoic Brown 2	Neutrazoic Brown IR	
Azoic Brown –	Printing Seal Brown Pdr (Soln)	
Azoic Black 1	Printing Black FFM	
Azoic Green	Printing Green G Powder	
	Direct Dyestuffs	
Direct Yellow 6	Atlantic Stilbene Yellow 3GA Ex Conc	40001
Direct Yellow 7	Atlantic Brilliant Flavine S	49010
Direct Yellow 8	Atlantic Brilliant Yellow 5G Conc	13920
Direct Yellow 9	Atlantic Brilliant Yellow MN Extra	19540
Direct Yellow 11	Atlantic Stilbene Yellow GA Ex Conc	40000
Direct Yellow 12	Atlantic Chrysophenine YA Super Conc	24895
Direct Yellow 26	Atlantic Fast Yellow 5GL Conc	25300
Direct Yellow 28	Atlantic Fast Yellow NNL 175%	19555
Direct Yellow 28	Atlantic Fast Yellow WB 125%	19555
Direct Yellow 28	Atlantic Resin Fast Yellow LRTF Ex Conc	19555
Direct Yellow 29	Atlantic Fast Yellow FFX	19556
Direct Yellow 62	Atlantic Diazo Yellow 2G Conc	36900
Direct Yellow —	Atlantic Resin Fast Yellow RLC	—
Direct Orange 1	Atlantic Fast Orange 3G	22375
Direct Orange 8	Atlantic Fast Orange R	22130

Direct Orange 34	Atlantic Fast Orange EGL	40215
Direct Orange 37	Atlantic Fast Orange ERL	40265
Direct Orange 72	Atlantic Resin Fast Orange 4GLL	—
Direct Orange 73	Atlantic Diazo Orange GXCW	25200
Direct Red 4	Atlantic Fast Scarlet YA	29165
Direct Red 24	Atlantic Fast Scarlet 4BA	29185
Direct Red 24	Atlantic Fast Scarlet 4GS	29185
Direct Red 32	Atlantic Fast Rubine B Conc	28395
Direct Red 37	Atlantic Scarlet B	22240
Direct Red 39	Atlantic Scarlet 3B	23630
Direct Red 75	Atlantic Fast Pink 2BL 150%	25380
Direct Red 79	Atlantic Resin Fast Red 6BLL	29065
Direct Red 83	Atlantic Resin Fast Rubine LBBL High Conc	29225
Direct Red 83	Atlantic Resin Fast Violet 2RLL	29225
Direct Red 84	Atlantic Resin Fast Brown 3RL	35760
Direct Red 118	Atlantic Diazo Scarlet A 200%	17780
Direct Red 122	Atlantic Diazo Scarlet 2BL High Conc	29210
Direct Red 123	Atlantic Diazo Scarlet ROA Conc	17820
Direct Red 127	Atlantic Diazo Bordeaux 2BL	28215
Direct Red 149	Atlantic Diazo Bordeaux 7BL Ex Conc	29110
Direct Red 153	Atlantic Diazo Red 7BL	28210
Direct Violet 7	Atlantic Fast Heliotrope FFR	27855
Direct Violet 51	Atlantic Fast Violet FFB	27905
Direct Blue 4	Atlantic Brill Blue G Extra	24380
Direct Blue 22	Atlantic Blue RW	24280
Direct Blue 86	Atlantic Fast Turquoise LGA	74180
Direct Blue 120 or 120A	Atlantic Diazo Blue BR	34085
Direct Blue 126	Atlantic Diazo Blue 2RW	34010
Direct Blue 147	Atlantic Diazo Blue MP	34010
Direct Green 1	Atlantic Dark Green B	30280
Direct Green 1	Atlantic Dark Green BG	30280
Direct Green 1	Atlantic Green WT	30280
Direct Green 6	Atlantic Green 2B	30295
Direct Brown 1	Atlantic Brown 3GN Ex Conc	30045
Direct Brown 1A	Atlantic Brown D3Y	30110
Direct Brown 6	Atlantic Congo Brown G	30140
Direct Brown 31	Atlantic Brown BCW	35660
Direct Brown 31	Atlantic Brown BP	35660
Direct Brown 95	Atlantic Fast Brown BRL	30145
Direct Brown 95	Atlantic Resin Fast Brown BRL	30145
Direct Brown 106	Atlantic Fast Brown 3GL	36200
Direct Brown 112	Atlantic Resin Fast Brown 8RL	29166
Direct Black 4	Atlantic Black RW	30245
Direct Black 19	Atlantic Artificial Silk Black G	35255
Direct Black 38	Atlantic Black BD	30235
Direct Black 38	Atlantic Black C	30235
Direct Black 38	Atlantic Black E	30235
Direct Black 38	Atlantic Black EA	30235
Direct Black 38	Atlantic Black GAC	30235
Direct Black 38	Atlantic Black GG	30235
Direct Black 38	Atlantic Black GXCW	30235
Direct Black 38	Atlantic Black GX00	30235
Direct Black 38	Atlantic Black SD	30235
Direct Black 51	Atlantic Fast Black L	27720
Direct Black 51	Atlantic Fast Black RCW	27720
	Vat Dyestuffs	
Vat Yellow 2	Anthravat Flavone GC Paste	67300
Vat Yellow 4	Anthravat Golden Yellow GK Paste	59100
Vat Yellow —	Anthravat Yellow PGA Double Paste	—
Vat Yellow 21	Anthravat Bright Yellow 3G Paste	69705
Vat Blue 5	Thiovat Brilliant Indigo 4BR Paste	73065
Vat Blue —	Thiovat Brilliant Indigo 6B Ex Paste Fine	—
Vat Blue 18	Anthravat Navy Blue BR Paste	59815
Vat Blue 20	Anthravat Dark Blue BO Paste	59800

AUGUSTA CHEMICAL CO
P O Box 660
Augusta, Ga

Liquisul

Yellow 2 GCF
Yellow GCF
Yellow RCF
Yellow SCF
Tan YCF
Tan DRCF
Tan RCF
Brown GRCF
Olive Yellow YCF
Olive Yellow GCF
Olive Drab DGCF
Forest Greeen BGCF

Aqueous solutions of sulfur dyestuffs recommended by the manufacturers for clean bright shades on cotton.

Accozoic Red GK

Azoic blue red shade for printing. Good light and washfastness and good color value are claimed.

Acco Fast Red RC Base

Azoic diazo component.

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BERKSHIRE COLOR CO, INC
12th & Bern Streets
Reading, Pa

Berkshire Brilliant Turquoise B

A new development for cotton and cellulosic fibers. It is claimed to have many advantages over the previously phthalocyanine derived turquoise dyes. It is redder and brighter on cotton than the older types. It is more substantive and dyes dead cotton better. It is stated that it is also more stable to pH change in finishing and holds its cast better with resins and fixatives.

Berkshire Direct Black GXAW

A low cost purified improved type of direct black for cotton and rayon. Bloomy in cast. It stains acetate only very slightly and can find use in cross-dyeing.

Durofast Navy Blue WF

A new premetalized direct dyeing navy blue suitable for resin aftertreatments. It is said to have found wide acceptance as a utility color.

Durofast Rubine BLN

A new premetalized direct dyeing bluish-red for cotton and rayon. Extreme fastness to light and wash is claimed. It is said to overcome the objection to older types which had poor substantivity. This has a very good rate of exhaust and becomes a good base for compound shades.

Durolan Neutral Colors

The first of a new group of premetalized dyes for wool and nylon said to possess excellent fastness properties. They are dyed from a neutral dye bath.

Durolan Neutral Yellow GLW
Durolan Neutral Yellow NLW
Durolan Neutral Orange RL
Durolan Neutral Red B

Duronyl Colors

This is a special line of dyes for nylon. They can be applied like direct colors from a neutral bath, or can be heavily exhausted with ammonium sulfate. They are said to have good fastness, excellent solubility, good dyeing properties, and have been specifically developed to minimize barré effects so often obtained with other colors.

Duronyl Yellow G
Duronyl Scarlet G
Duronyl Orange 5R
Duronyl Red 3B
Duronyl Royal Blue B
Duronyl Navy BR
Duronyl Black J
Duronyl Black JM

Duronyl Fast Black GL Plus
Durofix NYL

First of a group similar to the above but with even superior fastness when aftertreated with Durofix NYL.

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CARBIC-HOECHST CORP
P O Box 118
Westfield, NJ

Brilliant Acid Blue DH

Economical bright phthalocyanine acid blue said to possess excellent fastness properties on wool and silk.

Indigosol Brilliant Violet 12RB

Similar to Indigosol Violet I4R, slightly more bluish, and said to have good money value.

Indigosol Rubine IRB

Clear pink shades. It is claimed to have better money value than existing reds. It is stated that it has good affinity and is therefore recommended for exhaustion dyeing. Easily developed.

Inthion Brilliant Blue 5GL
This new dyestuff produces phthalocyanine blues on cotton and rayon at room temperatures with a fixation time of less than one minute. The brilliant shades are very fast and are dischargeable.

Remazol*
Yellow GGL
Yellow GR
Brilliant Red BB
Brilliant Red 5BA
Turquoise P
Vinylsulfon fiber reactive dyes (with the exception of Remazol* Brilliant Red 5BA) they can also be used for dyeing from longer liquor ratios.

Variogen Base I
Dyeings of Variogen Base I on Naphthol AS produce deep bright green shades with cobalt salts and grey shades with copper salts. Dyeings are said to be very fast to crocking, light and peroxide. Can be white and color discharged.

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CIBA CO, INC
Dyes Division
Fair Lawn, NJ

Alizarine Fast Blue RFE
A bright reddish blue applicable by all acid wool dyeing methods. For dyeing and printing wool, silk, and polyamide fibers and specially suitable for the production of bright blue shades on knitting yarns, dress materials, and over-coatings. Of considerable interest for baby blue shades.

Chlorantine Fast* Olive Green EGLL
Recommended for furnishing fabrics, yarn, knitted styles and dress material. Of special interest for crease-resistant treatment. Reserves acetate and yields dyeings of good solidity on cotton and viscose.

Chlorantine Fast* Orange GLL
Possesses the fastness for which the "Chlorantine Fast*" line is well known, with excellent exhaust and build-up and is very little affected by dyebath volume variations, good level dyeing, little bleed in washing and good solubility. Not suited for discharge or aftertreatment with resins.

Cibacete* Blue BLT
Bright, low temperature dyeing blue for acetate. Good build-up and economical.

Cibacete* Blue DBL
Excellent light and sublimation fastness is claimed; especially recommended as an economical base component for navy shades on polyester fibers. Also recommended on acetate and Arnel.

Cibacete* Dark Blue RB Conc
High degree of fastness is claimed, especially to light on polyester fibers, good build-up. Used for print-on styles on polyamides, secondary and triacetate rayons.

Cibacete* Navy Blue RL Conc
Used for fast navy blues and blacks on polyester fibers in clothing materials and soft furnishings. Good build-up with wool and cotton reserve. Fastness to light, washing and chlorine is said to be excellent.

Cibacete* Yellow GWN
Recommended by the manufacturers for all synthetic fibers, particularly Arnel and polyester fibers. Sublimation fastness is claimed to be outstanding.

Cibacron* Brilliant Blue C4GP
A bright, reddish printing and thermofix dyeing blue for natural cellulosics. Redder than present turquoises. Permits production of very pale to full shades on cotton without difficulty. Unfixed dye easily washed off. Light and chlorine fastness is claimed to be higher than that of present Turquoises. Excellent fastness, not recommended for exhaust dyeing.

Cibacron* Scarlet 4GP
Especially suited for padding and printing. It is said to have outstanding purity and brilliance with very good washout properties. Is dischargeable by all methods. Good fastness to light is claimed, only slightly affected by resin finishes. Suitable for dyeing and printing wool.

Cibacron* Scarlet RP
A dyeing color with high reactivity for shorter fixation periods in some applications. It is said to give high yield and good chlorine fastness. Solubility is said to be excellent. Covers dead cotton well by thermofix procedure. Free from copper and manganese. Not dischargeable.

Cibacron* Turquoise Blue GF
A brilliant turquoise. Unfixed dye is very easily washed off without staining white areas. Recommended for dyeing and printing. Good fastness to light and washing is claimed.

Cibacron* Yellow G
Bright shade. Readily soluble yielding pastes of good stability. Dyeings are dischargeable to pure white with neutral discharge. Very good fastness to light, water, washing and perspiration is claimed. Suitable for resin finishing. Can be applied to wool and silk as well as cellulosics.

Cibanone* Blue GCDP Double Paste
The printing form of Cibanone* Blue GCDN Double Paste used for dyeing fast to washing shades, raincoat, and drapery materials and goods exposed to weather.

Cibanone* Dark Blue MBA Paste
Outstanding money value with excellent wash and light fastness is claimed. Dyes cotton a deep, pleasing Navy—a "workhorse" color for all-round usage.

Cibanone* Golden Orange 5G Double Paste
A bright yellowish orange with good build-up and good all-round fastness. It is said to be useful for coloring yarns and fabrics requiring high fastness to bleaching, washing, and light. Very little change with crease-resistant finishes.

Cibanone* Printing Black TR Double Paste
Yields deep bloomy blacks on cellulosic fibers by gum, emulsion or flash methods of printing. It is said to have outstanding fastness to light and excellent fastness to chlorine. Recommended for shirting material.

*Registered trademark

COLLWAY PIGMENTS
a Division of
General Aniline & Film Corporation
435 Hudson Street
New York 14, NY

Permanent Violet A Supra Paste 49-6016
Used for textile printing, dyeing synthetic fibers (such as viscose) in the mass, in latex paints, etc.

Permanent Violet Lake 49-6002
Used in printing inks, automotive, finishes, lacquers, enamels, etc.

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E I du PONT de NEMOURS & CO, INC
Organic Chemicals Dept
Dyes & Chemicals Division
Wilmington, Del

Cationic Dyes—Basic Dyes

"Dekatyl"* Brilliant Red B
"Dekatyl"* Brilliant Red 3G
Represent two new cationic dyes that were especially developed for application to Dacron* type 64 polyester fiber, exhibiting brilliant bluish red and yellowish red shades. They will be used on materials intended for women's wear as well as on a variety of specialty items such as effect threads. These dyes are said to exhibit good fastness to light in pastel shades in addition to having the wetfastness properties that are requisite for women's wear materials. The customary application procedures by means of aqueous carrier baths at the boil or under pressure at 250°F are recommended. Excellent dyebath stability is said to be exhibited at this high temperature over the pH range of 2.0 to 7.0.

"Dekatyl" Blue G
Is said to be of particular interest as a base in the production of lightfast navy and black shades on Dacron types 64 and 62 polyester fiber. It is also suitable for application to other types of fibers including acrylic and modacrylic. This dye is particularly recommended by the manufacturers for production of deep shades since the lightfastness is best at concentrations greater than 2.0% on the Dacron. Best shade reproducibility is obtained when Dekatyl Blue G is applied in the pH range of 3 to 5. Certain precautionary measures may be necessary when applying this dye to Dacron under pressure or in blends with wool.

Sevron* Brilliant Red 2B
A bright, bluish red cationic dye recommended for producing jockey red shades on Orlon* acrylic fiber in combination with Sevron Orange G. It works well in combinations to produce blacks and is useful for the production of brown, charcoal and navy shades. Sevron Brilliant Red 2B has adequate lightfastness for sweaters made of Orlon and possesses the wetfastness characteristics of other Sevron dyes. This product has good dyebath stability over the pH range of 3 to 10, builds up well and dyes levelly. It is of interest for a number of other fibers in the acrylic and modacrylic range.

Du Pont Victoria Pure Blue BO Solution
A convenient solution form of the long established BO type. It will be of interest where non-dusting is an important factor in the continuous coloring of pa-

*Registered trademark

*Registered trademark

per since the dye can be metered directly into the pulp line.

Du Pont Spirit Blue NS

A solvent dye for use in hectographic inks. It is a bright, clean-handling blue that has very good early copy intensity and assists in the production of inks having low viscosities and good coating properties.

Direct Dyes

Du Pont Paper White BPN Solution
Du Pont Paper White BPNX

The range of Du Pont fluorescent whites has been augmented by the addition of the products mentioned. They impart moderate to high visual brightness to practically every grade of white paper. Manufactured in the form of powder and solution, the BPNX is a powder type that can be added dry to the pulp in the beater and is equally effective in surface applications from either water or surface sizing solutions. The solution form is suitable for general all-round use and is of particular interest for addition to the pulp in the beater in continuous coloring and for surface application.

Disperse Dyes

Latyl* Red MG

This disperse dye is intended for application to Dacron polyester fiber, possesses a true red shade and because of its good fastness to sublimation it is of special interest for use by the Thermosol method. It is said to have good fastness to light and wet processing and will find many uses in the production of maroons, browns, navies and blacks on 100% Dacron and on blends of Dacron and cotton. Latyl Red MG can also be applied to an extensive range of other synthetic fibers and based on end use requirements will be found most useful in many instances.

Latyl Blue RLN

An economical disperse dye for Dacron polyester fiber that is especially recommended by the manufacturers as a general purpose blue for the production of navy and black shades. This dye is claimed to have good fastness to light, washing and sublimation and is of particular interest because of its relatively neutral shade change when exposed under incandescent light. This property obviates the use of the more expensive green-flaring brilliant blues.

Latyl Blue BCN 80% Paste
Latyl Brilliant Blue BG 80% Paste

These two established types of disperse dyes are now being made available in paste form. They are readily dispersible and non-specking types especially prepared for application by the Thermosol process. Their fastness properties and general characteristics are identical with those of the standard products.

Pigment Colors

Monastral* Fast Green GFNP Paste

Represents a conversion of the former Monastral Green GFN Paste to specific use for the coloration of paper. It possesses the fastness properties generally associated with the Monastral types of pigment dyes.

Lithosol* Orange Y Paste

A new pigment color that is particularly suited to use in the coloring of various types of paper. It is a highly dispersed pigment, possesses considerably reduced particle size and is equally satisfactory for both beater and coating applications. The physical properties of the color recommend it especially for use in coatings and its attractive shade will be of interest in the production of papers where fastness to water-bleeding and resistance to transfer are important. Lithosol Orange Y Paste is said to have good to excellent fastness toward light and the other color destructive agencies commonly encountered. Because this is a pigment, alum is required for its retention in beater dyeings.

Sulfur Dyes

Sulfogene* Carbon HCF Liquid
Sulfogene* Carbon MCF Liquid

These liquid types are produced in the reduced state so that they can be added to the bath immediately without the need for further reduction or dissolving. Since the water used in preparing the bath will contain oxygen, it is suggested that a small amount of sodium sulfide or other reducing agent be incorporated in the bath before adding the dye so as to prevent oxidation of the dye. Both products are said to possess the same fastness properties as the standard grain types.

Vat Dyes

Ponsol* Yellow PGN Double Paste

An improved anthraquinone-type vat paste that produces reddish-yellow shades having good all-round fastness. Indicated for application to cellulosic fibers it will be of interest as a shading color in dyeing packages, beams and piece goods. It is dyed by customary vat dyeing methods requiring one ounce per gallon each of caustic soda and Du Pont Hydrosulfite Conc for reduction and dyeing in circulating machines, and four ounces of each when applied by the pad-steam process. While it has good vat stability it is not recommended for machine dyeing at temperatures above 140° to 160°F.

Ponsol Brown GF Double Paste

An anthraquinone vat dye said to possess several advantages over similar vat browns. It is of special interest for covering immature cotton as well as for producing a good union on rayon and cotton. Ponsol Brown GF returns quickly to normal shade after hot pressing or water spotting, shows little shade change in incandescent light and a minimum change in shade on soaping, which is reflected in its good washfastness. This dye is said to exhibit 40 to 60 hours' lightfastness, depending on depth of shade.

Ponsol Olive F Double Paste

This anthraquinone-type vat dye yields attractive brownish olive shades that have the interesting characteristic of speed of return to normal shade following hot pressing or water spotting. It also has the advantage of becoming greener when viewed under incandescent light. Ponsol Olive can be used to dye cotton and rayon to a good union and exhibits only a slight shade change when applied to these fibers and treated with Zelan* AP Paste durable water repellent or with Zeset* MC fabric stabilizer. This dye is said to have lightfastness in the 40- to 160-hour range, to show good fastness to peroxide bleaching, drycleaning, hot pressing, water spotting and is only negligibly affected by copper and iron. Ponsol Olive F maintains good strength stability when applied at high temperatures (180° to 190°F) but becomes considerably yellower in shade. It is only slightly affected in strength from varying concentrations of caustic soda.

Ponsol Brilliant Violet 4RNP 80% Paste

Represents an anthraquinone-type vat dye having an improved physical form rendering it particularly suitable for package dyeing. It has a bluish violet shade and is comparable in application and fastness properties to the well-established 4RN Paste type although it does show an advantage of having better level dyeing properties. Ponsol Brilliant Violet can be used for dyeing piece goods by the Du Pont Pad-Steam Continuous Dyeing Process and also by other methods. The physical properties of this improved type contribute to the smoothness of paddings on tightly woven fabrics such as broadcloths and poplins.

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EASTMAN CHEMICAL PRODUCTS, INC
Subsidiary of Eastman Kodak Company
Kingsport, Tennessee

Eastacryl Blue 5GL

A new Eastman cationic dye for dyeing acrylic fibers. This homogeneous dyestuff is suitable for dyeing brilliant green shades of blue said to possess excellent fastness to light, wetfastness, build-up in heavy shades and compatibility with other basic dyestuffs of high fastness. Eastacryl Blue 5GL has the valuable property of flaring green under artificial light.

Eastman* Fast Blue CWB

A bright greenish blue dye said to give excellent fastness to light sublimation, crocking, perspiration, and dry cleaning on acetate and triacetate fibers. Eastman Fast Blue CWB has been developed especially for the bathing suit trade where cold water bleeding is of prime importance.

Eastman* Polyester Black OBL

A direct dyeing polyester black giving full backs on polyester fibers. Eastman Polyester Black OBL is said to have excellent fastness to light, washing, perspiration, and sublimation.

Eastman* Polyester Brilliant Blue 2RL

A bright red shade of blue said to possess very good fastness to washing, sublimation, crocking and dry cleaning. Eastman Polyester Brilliant Blue 2RL has an excellent build-up even at temperatures below the boil and is of interest for jig dyeing. Eastman Polyester Brilliant Blue 2RL is said to be an excellent component for bright royal blues and violets.

*Registered trademark

*Registered trademark

*Registered trademark

Eastman* Polyester Brown 3RL

A homogeneous dye which dyes polyester fibers a red shade of brown. Eastman Polyester Brown 3RL is said to have excellent fastness to light, washing, crocking, sublimation and perspiration. Because of its redness in shade, it is of interest for replacement of oranges or reds and yellows, particularly in light shades where optimum lightfastness is required. Eastman Polyester Brown 3RL stains wool to a lesser degree than most oranges.

Eastman* Polyester Brilliant Red FFBL

A bright bluish shade of red said to possess excellent fastness to light and very good fastness to washing and perspiration. Eastman Polyester Brilliant Red FFBL may be used as a self shade or as a red component in greys and tans. Eastman Polyester Brilliant Red FFBL is not a completely non-subliming dye and should not be used where optimum sublimation fastness is required. Eastman Polyester Brilliant Red FFBL is of interest for dyeing wool and polyester fibers as it stains wool lightly in medium and heavy shades.

Eastman* Polyester Dark Brown GL

Ranges in shades from neutral shades of tan to full dark brown shades said to possess excellent fastness to light, washing, crocking, and perspiration. Eastman Polyester Dark Brown GL shows excellent build-up with low cost for full dark shades, particularly for men's wear.

Eastman* Polyester Navy Blue RL

An economical, bloomy navy blue dye with excellent build-up properties. Eastman Polyester Navy Blue RL is said to have outstanding fastness to light, washing, crocking, and perspiration.

Eastman* Polyester Yellow 5GLS

A new bright greenish yellow dye said to possess outstanding fastness to light, washing, sublimation and crocking, Eastman Polyester Yellow 5GLS has the advantage of dyeing a green tone in light shades and holding this green tone in heavier shades. It is stated that it is of interest where excellent fastness is required such as in men's wear, rainwear, outerwear, draperies, etc. Eastman Polyester Yellow 5GLS may be applied with carriers or under pressure.

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GEIGY DYESTUFFS
Division of Geigy Chemical Corp
Saw Mill River Rd
Ardsley, NY

Cuprophenyl* Yellow 2RL

This product offers an after coppered direct dyestuff said to be distinguished by high fastness and simplicity of application. It is recommended by the manufacturers as the yellow element for continuous pad dyeing light- and wash-fast dischargeable ground shades. It is stated that this product's outstanding features are its superior lightfastness, wash and wet fastness, quick drawing properties and the fact that it requires less salt for good exhaustion. Fastness to washing and light is even more improved with TBL finish.

Irgalan* Violet F-2BL

This is an important addition to the Irgalan range being probably, it is stated, the brightest true premetalized color yet marketed. This new product is said to have very good wetfastness properties, outstanding light fastness, excellent neutral drawing properties, resist carbonizing, fulling and decatizing. It is recommended for general use on wool, nylon or silk.

Maxilon* Yellow 2RL
Maxilon* Yellow 4GL

These products represent Geigy's latest additions to their Maxilon range of cationic colors for application to Orlon, Acrilan 16, and other acrylic fibers. Both are well adapted for use with Geigy's IT Method of application.

Maxilon Yellow 2RL maintains the standard of wetfastness characteristic of this series but excels in its exceptionally good lightfastness.

Maxilon Yellow 4GL is a bright yellow said to possess good lightfastness and a true representation of standards characterized by other basic Maxilons.

Polar Brilliant Blue 2GL Extra

This latest addition to Geigy's Polar range is a brilliant greenish shade of blue said to possess such outstanding virtues as excellent fastness to washing, fulling and perspiration. Chlorination does not affect its shade or fastness, and shade change due to chroming is negligible.

Reactone* Brilliant Yellow 4GL 140%
Reactone* Orange G125%
Reactone* Red 2B 170%
Reactone* Brilliant Red BGL
Reactone* Scarlet GL
Reactone* Violet BL
Reactone* Blue RLD
Reactone* Turquoise Blue FGL 160%
Reactone* Navy Blue GRL
Reactone* Black RL

These Reactone dyestuffs are said to offer prints and dyed shades of unusual brilliancy, lightfastness from good to excellent, good penetration, simple application and exceptional tinctorial strength. They form a chemical linkage with cellulose and the stable bond of the dyestuff with fiber ensures outstanding wetfastness. Reactones react readily and prepared printing pastes are said to have outstanding stability, permitting storage for several weeks without danger of precipitation or decomposition. They have virtually no affinity for cellulose after fixation and removal of unfixed color presents no difficulty. The tendency to bleed is negligible and grounds remain clean. Reactone dyes can be used in combinations by either screen, roller printing methods or padding, to produce a wide range of shades from dull to very bright. Reactones can be steamed or heat fixed. It is stated that reproductivity is good, formulations simple and they can be applied alongside other types of dyestuffs.

Solophenyl Grey A 3BL
Solophenyl Grey ARL
Solophenyl Grey ABL

Three varying shades of grey have been added to Geigy's range of Solophenyl colors. As characteristic of the name Solophenyl these greys are said to possess fastness to light unsurpassed by any direct grey.

Solophenyl Grey A3BL offers a bloomy shade of grey which draws rapidly and requires only small quantities of salt. It reserves acetate and nylon; dyeing wool much lighter than cotton/viscose but on cast. It is said to possess outstanding wet and lightfastness; both improving with TBL finish. Grey A3BL dyes level and has good penetration.

Solophenyl Grey ARL is a reddish cast grey with similar drawing properties. It is said to dye on tone from beginning to end of dyeing operation regardless of point at which salt is added.

Solophenyl Grey ABL possesses a neutral shade of grey and has similar drawing properties but develops its true cast and full depth when salt is added. Acetate is reserved but nylon stained.

Tinon* Brilliant Pink 2RF Paste
Tinon* Golden Orange 5G Double Paste
Tinon* Dark Blue BOR-F Paste

Tinon Brilliant Pink 2R-F Paste is an anthraquinone vat dyestuff claimed to possess distinct superior lightfastness properties. This product is a medium to high temperature application dyestuff which requires a thorough soaping to develop its true shade. It also is said to possess excellent resistance to bleaching.

Tinon Golden Orange 5G Double Paste is a rich yellowish orange anthraquinone vat dyestuff said to offer outstanding brightness on cellulosic fibers. Wherever good fastness to light, washing or bleaching is a requisite, such as shirting, toweling, draping, upholstery and sewing thread, this product is recommended by the manufacturers as a self shade or as a component in mode shade formulations. It is particularly suited to continuous dyeing methods where limited soaping time is available as it exhibits little shade change when soaped after dyeing. It can be used on all forms of cotton and rayon and performs well in all types of dyeing equipment. It is stated that it can be applied by reduced dyeing methods or as a dispersion followed by reduction, is not sensitive to normal variations in the concentration of caustic soda, dyes levelly, transfers well and has good stability at high temperatures. It has outstanding resistance to shade finishes.

Tinon Dark Blue BOR-F Paste is redder in shade than Tinon Dark Blue BO-F Paste, but equal in application and fastness properties. It is said to exhibit a high degree of lightfastness and has good resistance to washing, peroxide bleaching, perspiration and crocking. This product can be applied to all forms of cotton and rayon by procedures normally employed for these fibers.

* * *

GENERAL DYESTUFF CO
a Division of
General Aniline & Film Corp
435 Hudson Street
New York 14, NY

Benzo Red 3B

A new direct dyestuff, intended primarily for dyeing Zefran acrylic fibers. It yields bright bluish shades of red that are said to have good fastness to light and washing.

Genacryl® Red 4B

A cationic dyestuff which yields bright bluish-red shades on acrylic fibers. It is designed primarily for use (in conjunction with suitable Genacryl shading colors) in the dyeing of economical deep shades of Jockey Red and Scarlet. Its

*Registered trademark

*Registered trademark

*Registered trademark

outstanding properties are said to be strong tinctorial value, stability over a wide pH range, and very good fastness to washing, drycleaning, perspiration, and crocking.

Supralan® Red BB-CF

A new addition to the GDC range of neutral-dyeing premetalized dyestuffs. It yields bright bluish shades of red on wool, silk, nylon, and most acrylic and modacrylic fibers. It is suitable for application on wool/nylon and wool/acrylic blends as raw stock, slubbing yarns, and piece goods. Dyeings obtained with this product are said to be characterized by very good fastness to light, washing, and fulling.

* * *

HARMON COLORS
National Aniline Div
Allied Chemical Corp
P O Box 14
Hawthorne, NJ

Quindo Magenta Presscake RV-6813

A new, unique quinacridone pigment possessing a clean, brilliant, red-violet hue. It is said to show excellent resistance to alkali, acid and soap, and is non-bleeding in dry cleaning solution. It is offered in the presscake form for use in resin flushings and water dispersions for textile emulsion printing ink applications.

Quindo Violet Presscake RV-6912

A quinacridone pigment possessing a clean, brilliant, red-violet hue, bluer in shade than the RV-6813. It is said to show excellent resistance to alkali, acid and soap, and is non-bleeding in dry cleaning solution. It is offered in the presscake form for use in resin flushings and water dispersions for textile emulsion printing ink applications.

* * *

INTERCHEMICAL CORP
Color & Chemicals Div
Hawthorne, NJ

Aridye*/Aquaprint* Brilliant Fast Fuchsia

Aridye Brilliant Fast Fuchsia is a new resin-bonded pigment color formulated especially for fast-color printing cottons, synthetics, and blends for both apparel and household uses. It is applied to textiles in the form of a pigmented water-in oil emulsion. It is useful in medium-dark shades for producing bright, rich fuchsias, and in light shades for producing attractive pinks. Outstanding features are said to include: lightfastness which meets normal drapery requirements; excellent fastness to washing, passing a No. 4 wash; excellent fastness to drycleaning, based on the new AATCC Test No. 85-1960. Aridye Brilliant Fast Fuchsia is excellent for discharge printing; it is not affected by sodium or zinc sulfoxylate formaldehyde. Also, it provides excellent resistance to caustic cut-out in plissé work. This color is offered also in Interchemical's Aridye Pigment Padding Series and Aquaprint Series.

Aridye*/Aquaprint* Brown 4K

Aridye Brown 4K is a new resin-bonded pigment color formulated especially for fast-color printing cottons, synthetics, and blends for both apparel and household uses. It is applied to textiles in the form of a pigmented water-in-oil emulsion. It is useful in short cuts for producing chocolate shades, in medium and long cuts for neutral tans, and in blends with other Aridye Colors for producing a wide variety of compound shades. It is stated that Aridye Brown 4K provides outstanding fastness to light: it withstands 300 hours Fade-Ometer exposure without appreciable shade change or fading. In addition, it is said to provide excellent fastness to drycleaning, based on the new AATCC Test No. 85-1960. Aridye Brown 4K is an excellent color for printing cotton to be plisséd; it does not cut-out with caustic soda. Brown 4K is offered also in Interchemical's Aridye Pigment Padding Series and Aquaprint Series.

Aquaprint* Supra

Black K	Red R
Blue 2G	Red RF
Blue 2GN	Bright Red DF
Blue 3G	Rubine 2B
Blue 2R	Rubine 5B
Brown R	Violet 4B
Green B	Violet RD
Navy RN	Yellow 2R
Orange R	Yellow 2GL
Red 2B	Yellow 2GS
Red 3B	Yellow K

The Aquaprint "Supra" Colors listed above are new additions to Interchemical's expanding line of water-dispersible pigment colors—formulated with reactive binders—for printing by the oil-in-water emulsion system.

Major advantages of the Supra Colors when used in conjunction with Aquaprint Supra Clears and Reactor, are claimed to include:

1. Maximum fastness to repeated home washing, commercial laundering, scrubbing, and wet crocking.
2. Excellent all-round fastness properties obtained either by acid aging or neutral steaming.
3. Satisfactory fastness for many end uses achieved without the necessity of high-temperature curing; ie, the fabrics, after printing, merely need to be can or tower dried. This has proved particularly advantageous for printing certain blends containing synthetic fibers which are damaged at elevated temperatures.

Aquaprint Supra Colors, Clears and Reactor are used for fast-color printing a wide variety of apparel and household fabrics, including those made from cotton, linen, rayon, acetate, triacetate, polyamide, polyester, acrylic, glass, and other fibers and blends.

Aridye*/Aquaprint* Supra
Yellow 2GL
Yellow 2GS

The two yellows listed above were developed for pigment-printing by the water-in-oil and oil-in-water emulsion systems. Both are new Yellow 2G "types" which provide improved fastness to light. Like Yellow 2G, both are said to provide excellent fastness to washing. They are suitable also for plissé and discharge printing.

Aridye*/Aquaprint* Yellow RK

Aridye Yellow RK is a new resin-bonded pigment color formulated especially for fast-color printing cottons, synthetics, and blends for both apparel and household uses. It is applied to textiles in the form of a pigmented water-in-oil emulsion. It is useful for producing mustard yellow shades and for shading and toning purposes. Outstanding features are said to include: excellent running properties; lightfastness which meets normal drapery requirements; excellent fastness both to washing and drycleaning. This color is offered also in Interchemical's Aquaprint Series. The colors in this series are applied to textiles in the form of pigmented oil-in-water emulsions.

* * *

KOPPERS CO, INC
Chemicals and Dyestuffs Div
Pittsburgh 19, Pa

Amacel* Developed Black 3BS
Amacel* Developed Black 3BS—200%

Developed black for acetate, Arnel, nylon yarn or fabric. Finely dispersed, produces clean dyeings said to be fast to wet processing and wet lay-up. Couples with developers BON, Naphthol AS-D or phloroglucinol to produce blacks ranging from bluish to jet.

Amacron* Red FB

A bright bluish red for polyester fiber. It is said to have excellent fastness to light, good fastness to sublimation, low stain on wool and negligible stain on cellulosics. Exhaust good, permits good shade build-up. Excellent dispersion, insures speck-free dyeing and prints. Applicable by padding and curing methods. Can be applied with carrier or under pressure.

Amacid* Nylon Black PB

A new neutral dyeing acid black for nylon fabric that produces jet shades desired by the apparel trade. Amacid Nylon Black PB fixes with tannic acid and tartar emetic to allow 140°F wasfastness. Dyeings exhibit minimum barriness.

Amanil* Supra Blue 9GL

A resin-fast bright direct blue dye for cellulosic material. It is stated that dyeings stand resin and color fixing agents with minimum amount of loss in lightfastness. Shade change on resin-fixative is minor. Dye is said to produce economical shades of excellent brightness on yarn or piece goods.

Amanthrene* Olive S-MF Paste
Amanthrene* Olive T-MF Paste

Two anthraquinone vat dyestuffs with controlled particle size tailored for dyeing of yarn and raw stock. Dyestuffs produce economical olive shades on variety of cellulosic materials. Fastness to chlorine, peroxide is said to be excellent. These dyestuffs are used both for shading and to build depth.

Amanthrene* Brown RM-MF Double Paste

An economical vat brown that is said to be finding a place in the cotton dress goods trade because of its excellent build-up and leveling properties. Amanthrene Brown RM-MF double paste is a high energy dyestuff that dyes well when dyed with other dyes in this class, as Olive Green, Olive T, etc. Fastness properties are claimed to be excellent.

Amanthrene* Black HB-MF Paste

A direct dyeing vat black which is said to possess high fastness to chlorine, peroxide, mercerization, washing and wet processing. Amanthrene Black HB-MF Paste is economical and builds well into jet blacks desired by the yarn dyed dress goods trade. MF quality allows

*Registered trademark

*Registered trademark

*Registered trademark

level dyeings and minimizes difficulty with penetration.

Amanthrene* Brown OR-MF Paste

An economical vat dye that builds and levels well in light or heavy shades. Shade and lightfastness after resin treatment are not impaired. Dyes well with high energy vat colors. It is claimed to possess excellent fastness to light and chlorine.

Amanthrene* Printing Brown H3R Paste
Amanthrene* Printing Brown SRL Paste

Two economical vat printing browns for application or discharge printing on cotton and rayon, which fix easily in emulsion thickening or conventional type gums. Color change under artificial light is said to be low and this enhances application in beige and tan prints. These browns are fast to resin aftertreatment.

* * *

OTTO B MAY, INC
52 Amsterdam St
Newark, NJ

Mayvat Non-Migrating Pastes

A full range of vat dyestuffs for piece goods designed as "NM" dyestuffs which will not migrate in the pigment form during the drying operation after pigmentation. These dyes are said to eliminate serious problems encountered by the dyer including: white under nebs, streaky dyeings, side to center shading, and other effects due to uneven drying in the flue dryer, which may also be exaggerated due to uneven squeeze of the goods, side to center. This effect is, perhaps, more serious than commonly realized since if for example, the center of the goods is slightly wetter than the sides, with migrating dyes this portion will dry last and accordingly will receive more dyestuff by migration. It also is said to eliminate selvedge shading due to drying out of the selvedge in the pad wet—jig or steam type of dyeing. In many instances, also, better strength is obtained with "NM" dyes, due to a better distribution of the dye over the goods.

* * *

NATIONAL ANILINE DIVISION
Allied Chemical Corp
40 Rector St
New York 6, NY

Carbanthrene® Brilliant Violet 3B Paste

An IN (IW) group anthraquinone vat dye producing bright red-violet shades on cotton and rayon. It is practically unaffected by the presence of metals in the dyebath; suitable for use in all conventional dyeing equipment and for printing applications. Carbanthrene Brilliant Violet 3B Paste is said to possess excellent lightfastness and very good to excellent fastness to most wetfastness tests. It is particularly suitable for the production of dress goods and suitings.

Carbanthrene® Brilliant Violet 4B Paste

An IN (IW) group anthraquinone vat dye producing bright blue-violet shades on cotton and rayon. It is practically unaffected by the presence of metals in the dyebath; suitable for use in all conventional dyeing equipment and for printing applications. Carbanthrene Brilliant Violet 4B Paste is said to possess excellent lightfastness and very good to excellent fastness to most wetfastness tests. It is particularly suitable for the production of dress goods and suitings.

*Registered trademark

Carbanthrene® Golden Orange RF Double Paste

An IK (IW) group anthraquinone vat dye producing bright orange shades on cotton and rayon, and it is particularly suited for most resin aftertreatments. It is practically unaffected by the presence of metals in the dyebath, and is suitable for use in all conventional dyeing equipment. This product is particularly suitable for pad-steam applications. Carbanthrene Golden Orange RF Double Paste is said to possess good light fastness and very good to excellent fastness to most wetfastness tests.

Erie® Fast Scarlet SCB

A nondusting direct dye producing scarlet shades on cotton and rayon. It is practically unaffected by the presence of metals in the dyebath and exhibits very good solubility in cold water. It is said to possess good all-round fastness properties. Erie Fast Scarlet SCB has high tinctorial value and is particularly suitable for paper.

Lanamid® Bordeaux BL
Lanamid® Brown BL
Lanamid® Brown 3RL
Lanamid® Gray GBL
Lanamid® Red GL
Lanamid® Scarlet G
Lanamid® Violet 2BL
Lanamid® Violet RL

This group of Lanamid Dyes represents additional listing of National's line of neutral dyeing pre-metallized dyes applicable to wool, nylon and modified acrylics by all conventional dyeing methods. All of the Lanamid Dyes are said to possess excellent lightfastness in heavy shades and very good all-round wetfastness properties. Dyers will find these neutral dyeing pre-metallized types of great value for the production of shades of maximum fastness without extended processing being required.

Nabor® Blue B
Nabor® Blue 2G
Nabor® Brilliant Pink 2B
Nabor® Brilliant Red 6B
Nabor® Brilliant Red 4G
Nabor® Orange G
Nabor® Orange R
Nabor® Yellow 4G
Nabor® Yellow 6G

The Nabor dyes represent a group of cationic dyes applicable to acrylic and modified acrylic fibers by conventional dyeing and printing methods. They are said to possess excellent fastness to light and very good fastness to most wet processing conditions.

National® Sulfur Black BGLS Solution

A sulfur dye producing jet-black shades on cotton and rayon. It is highly recommended by the manufacturers for use in various types of pressure machines due to its superior solubility and exhausting properties. It is also recommended for pad-steam applications. This product is suitable for coloring materials to be subsequently rubberized. National Sulfur Black BGLS Solution is said to possess very good fastness to light and very good all-round fastness properties.

National® Sulfur Black 8GATS Solution

A sulfur dye producing jet-black shades on cotton and rayon. It is highly recommended by the manufacturers for use in various types of pressure machines due to its superior solubility and exhausting properties. It is also recommended for pad-steam applications. This product is suitable for coloring materials to be subsequently rubberized. National Sulfur Black 8GATS Solution is said to possess very good fastness to light and very good all-round fastness properties.

National® Sulfur Black GBS Solution

A sulfur dye producing blue-black shades on cotton and rayon. It is highly recommended by the maunfacturers for use in various types of pressure machines due to its superior solubility and exhausting properties. It is also recommended for pad-steam applications. This product is suitable for coloring materials to be subsequently rubberized. National Sulfur Black GBS Solution is said to possess very good fastness to light and good all-round fastness properties.

National® Sulfur Black RS Solution

A sulfur dye producing reddish-black shades on cotton and rayon. It is highly recommended by the manufacturers for use in various types of pressure machines due to its superior solubility and exhausting properties. It is also recommended for pad-steam applications. This product is suitable for coloring materials to be subsequently rubberized. National Sulfur Black RS Solution is said to possess very good fastness to light and good all-round fastness properties.

National® Sulfur Blue CGS Solution

A sulfur dye producing reddish-blue shades on cotton and rayon. It is highly recommended by the manufacturers for use in various types of pressure machines due to its superior solubility and exhausting properties. It is also recommended for pad-steam applications. This product is suitable for coloring materials to be subsequently rubberized. National Sulfur Blue CGS Solution is said to possess very good lightfastness and very good all-round fastness properties.

National® Sulfur Blue 2RS Solution

A sulfur dye producing reddish-blue shades on cotton and rayon. It is highly recommended by the manufacturers for use in various types of pressure machines due to its superior solubility and exhausting properties. It is also recommended for pad-steam applications. This product is suitable for coloring materials to be subsequently rubberized. National Sulfur Blue 2RS Solution is said to possess very good lightfastness and good all-round fastness properties.

National® Sulfur Bordeaux 2RS Solution

A sulfur dye producing reddish-bordeaux shades on cotton and rayon. It is highly recommended by the manufacturers for use in various types of pressure machines, due to its superior solubility and exhausting properties. It is also recommended for pad-steam applications. National Sulfur Bordeaux 2RS Solution is said to possess good lightfastness and good all-round fastness properties.

National® Sulfur Brown RDS Solution

A sulfur dye producing slightly green-brown shades on cotton and rayon. It is highly recommended by the manufacturers for use in various types of pressure machines due to its superior solu-

bility and exhausting properties. It is also recommended for pad-steam applications. This product is suitable for coloring material to be subsequently rubberized or resin finished for crease resistance. National Sulfur Brown RDS Solution is said to possess good lightfastness and good all-round fastness properties.

National® Sulfur Brown RS Solution

A sulfur dye producing reddish-brown shades on cotton and rayon. It is highly recommended by the manufacturers for use in various types of pressure machines due to its superior solubility and exhausting properties. It is also recommended for pad-steam applications. This product is suitable for coloring materials to be subsequently rubberized. National Sulfur Brown RS Solution is said to possess very good lightfastness and very good all-round fastness properties.

National® Sulfur Green 5GS Solution

A sulfur dye producing bright bluish-green shades on cotton and rayon. It is highly recommended by the manufacturers for use in various types of pressure machines, due to its superior solubility and exhausting properties. It is also recommended for pad-steam applications. National Sulfur Green 5GS Solution is said to possess good lightfastness and good all-round fastness properties.

National® Sulfur Navy Blue GICFS Solution

A sulfur dye producing bright reddish-blue shades on cotton and rayon. It is highly recommended by the manufacturers for use in various types of pressure machines due to its superior solubility and exhausting properties. It is also recommended for pad-steam applications. This product is suitable for coloring materials to be subsequently rubberized. National Sulfur Navy Blue GICFS Solution is said to possess good lightfastness and good all-round fastness properties.

National® Sulfur Yellow RCFS Solution

A sulfur dye producing reddish-yellow shades on cotton and rayon. It is also recommended for pad-steam applications. This product is suitable for coloring materials to be subsequently rubberized or resin finished for crease resistance. National Sulfur Yellow RCFS Solution is said to possess moderate lightfastness and good all-round fastness properties.

National® Sulfur Yellow SCFS Solution

A sulfur dye producing greenish-yellow shades on cotton and rayon. It is highly recommended by the manufacturers for use in various types of pressure machines due to its superior solubility and exhausting properties. It is also recommended for pad-steam applications. This product is suitable for coloring materials to be subsequently rubberized or resin finished for crease resistance. National Sulfur Yellow SCFS Solution is said to possess moderate fastness to light, and good all-round fastness properties.

Solantine® Fast Green 5GLL

A fast-to-light direct dye producing bright yellowish-green shades on cotton and rayon. It is said to possess good all-round fastness properties. This product is particularly recommended by the manufacturers for the production of upholstery and drapery fabrics or other applications where fastness to sunlight and dry cleaning is of importance.

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NYANZA COLOR & CHEMICAL CO
109 Worth St
New York 13, NY

Alizarine Blue AR

Alizarine Blue AR is an acid dyestuff said to be distinguished by its excellent level dyeing properties, good solubility and good fastness to light. It is well suited for use as a self-shade or for mode shades in combination with other level dyeing acid colors. It is suitable for dyeing all classes of woolen and worsted fabrics, carpet yarns, felt hats, etc. It is stated that, due to its excellent leveling properties it is a very good shading color, and may be used with acid metallized colors for brightening.

Alizarine Brilliant Blue R Conc

An acid dyestuff said to be distinguished by its exceptionally bright shade and excellent fastness to light. It is suitable for dyeing all classes of woolen and worsted fabrics, carpet and knitting yarns, felt-hats, etc. It is also said to be suitable for dyeing bright shades on nylon of good fastness to light and washing.

Metamine Dark Green B

An acid color which exhausts well from a sulfuric acid and Glauber's salt dyebath. It is sometimes applied from an acetic acid dyebath and exhausted with sulfuric acid. It produces a dark shade of green and is suitable for ladies' dress goods, yarns, wool and fur hats and for shading blacks.

Metamine Fast Violet 2R Extra

An acid dyestuff producing a reddish shade of violet. It exhausts well from a sulfuric acid and Glauber's salt dyebath. It is said to have excellent leveling properties and is used chiefly as a combination dye on piece goods as a base for navy blues. It is readily discharged.

Nyalan Grey BRL

This is another addition to the line of neutral dyeing premetalized colors. Nyalan Grey BRL produces a bluish grey suitable for application on wool or nylon piece goods, yarn or stock. In addition this color is recommended for use in dyeing wool, nylon blends and either nylon or wool blends with cellulosic materials in a neutral dyebath. This level dyeing color is said to possess excellent lightfastness and good fastness to milling and washing.

Nyalan Orange R

Nyalan Orange R belongs to the group of neutral dyeing premetalized colors. It produces a medium shade of orange suitable for application on Wool or Nylon piece goods, yarn or stock. In addition this color is recommended for use in dyeing wool, nylon blends and either nylon or wool in blends with cellulosic materials in a neutral dyebath. This level dyeing color is said to possess excellent lightfastness and good fastness to milling and washing.

Nyalan Red NB

This is a new addition to the expanding line of neutral dyeing premetalized colors. It produces a bluish red shade suitable for application on wool or nylon piece goods, yarn or stock. In addition this color is recommended for use in dyeing wool, nylon blends and either nylon or wool in blends with cellulosic materials in a neutral dyebath. This level dyeing color is said to possess excellent lightfastness and good fastness to milling and washing.

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ORGANIC CHEMICAL CORP
84 Valley St
East Providence, RI

Orco* Metallan Grey MBRL

A recent addition to the range of neutral-metalized type of dyestuff, Orco Metallan Grey MBRL is said to possess superior all-round fastness properties where applied to wool and nylon. It is especially recommended by the manufacturers for the production of neutral greys, either as a combination or self-shade on wool-nylon blends. Its red artificial light change should aid in matching of shades where such a change is desired.

*Registered trademark

PEERLESS COLOR CO, INC
521-525 North Ave
Plainfield, NJ

Acid Dyestuffs

Classification	*Peerless Name*	*New Colour Index No.*
Acid Yellow 11	Peeracid Fast Light Yellow 3G	18820
Acid Yellow 44	Peeracid Milling Yellow 6G	23900
Acid Orange 7	Peeracid Orange 11	15510
Acid-Mordant Dyestuffs		
Mordant Yellow 3	Peerachrome Yellow D	14095
Mordant Orange 1	Peerachrome Yellow R	14030
Direct Dyestuffs		
Direct Yellow 6	Peeramine Stilbene Yellow 3GA	40001
Direct Yellow 8	Peeramine Bright Yellow 5G	13920
Direct Yellow 9	Peeramine Bright Yellow MN	19540
Direct Yellow 11	Peeramine Stilbene Yellow GA	40000
Direct Yellow 12	Peeramine Chrysophenine YA	24895
Direct Yellow 62	Peeramine Diazo Yellow 2G	36900
Direct Orange 34	Peeramine Fast Orange TGLL	40220
Direct Orange 34	Peeramine Fast Orange 7GLL	40215
Direct Red 28	Peeramine Congo Red	22120
Direct Brown 95	Peeramine Fast Brown BRL	30145
Direct Black 38	Peeramine Black E	30235
Direct Black 38	Peeramine Black GXOO	30235

PUTNAM CHEMICAL CORP
Beacon, NY

Placet* Red 4G

This is the first representative of a new research development of BASF claimed to have considerably increased wetfastness properties on acetate in comparison with dispersed dyestuffs so far available on the market. It is said to have very good perspiration and water-fastness, properties long required for the dyeing of red shades in the acetate and acetate-viscose lining trade. It is suitable for the direct printing of acetate and is white dischargeable, being an azo color.

Palanthrene* Blue CLR (CI Vat Blue 38)

This reddish-blue color augments the existing line of entirely chlorine-fast Palanthrene vat blues. Palanthrene Blue CLR is said to have unique leveling properties and leading light, wash, soda boil and chlorine fastness. The product is suitable for reduced dyeing in all stages of production; as well as pad-jig, pad steam and package work. Blue CLR is available as "powder fine for dyeing" and "Colloisol" type representing ultra-fine particle size. It brings the group of chlorine-fast blues to a total of four. Others are:

Palanthrene Blue CLF
Palanthrene Blue CLB
Palanthrene Blue CLG
Palanthrene Blue CLR

Palanthrene* Black Brown RV (CI Vat Brown 20)

Under the name Palanthrene Black Brown RV, BASF markets a new chocolate brown color said to possess particularly good fastness to peroxide and chlorine. Likewise, its high lightfastness standard, combined with satisfactory properties regarding the coverage of dead cotton, is said to make the new product most valuable for vat dyers. It is suitable for all application methods and is available as "powder fine for dyeing" and "Colloisol" type.

Palanil* Brown 5RN

This product augments the existing line of Palanil dyes which are all specifically manufactured for both the dyeing and printing of polyester fibers. It is stated that the new brown brand has the characteristic Palanil properties of uniform small particle size, good light- and wetfastness properties, and versatility of application—carrier and high temperature dyeing. It is claimed that its excellent sublimation fastness makes this new dyestuff particularly suitable for Thermosol application.

Palanil* Scarlet RR

This new yellowish-red brand is said to deliver outstanding light and sublimation fastness, filling an important gap for the dyeing and printing of polyester fibers. It is suitable for all applications such as carrier, high-temperature, and especially Thermosol dyeing.

Ultra Lumatex* Colors

These colors are designed for use in the recently developed Ultra Lumatex printing system for all types of fibers. They are water-phase pigments which are said to contain all the polymerizing components necessary to obtain outstanding fastness properties to washing, perspiration, dry and wet crocking and drycleaning.

*Registered trademark

The following colors comprise this range:

Ultra Lumatex Yellow GN
Ultra Lumatex Yellow 1815 N
Ultra Lumatex Yellow RN
Ultra Lumatex Yellow Green GN
Ultra Lumatex Brilliant Yellow RRN
Ultra Lumatex Golden Yellow GN
Ultra Lumatex Brilliant Orange GN
Ultra Lumatex Orange RN
Ultra Lumatex Scarlet BN
Ultra Lumatex Brilliant Red BBN
Ultra Lumatex Red GRN
Ultra Lumatex Red RN
Ultra Lumatex Pink BBN
Ultra Lumatex Red Violet RN
Ultra Lumatex Brilliant Violet RN
Ultra Lumatex Blue BN
Ultra Lumatex Blue 3BN
Ultra Lumatex Blue GN
Ultra Lumatex Blue RN
Ultra Lumatex Yellow Brown GN
Ultra Lumatex Brown RN
Ultra Lumatex Dark Brown TN
Ultra Lumatex Green BN
Ultra Lumatex Green GN
Ultra Lumatex Green GGN
Ultra Lumatex Grey BN
Ultra Lumatex Black TN

Vialon* Fast Dyestuffs—Vialon Fast Blue FFG

A new bright-blue has been added to this special group of 1:2 metal complex dyes without solubilizing groups. This unique color will be marketed under the name Vialon Fast Blue FFG. The new dyestuff fits most favorably into the assortment of Vialon Fast Dyestuffs regarding dyeing behavior and fastness properties. It is said to have good leveling properties and, due to its excellent lightfastness combined with very good perspiration, seawater and chlorine fastness, is particularly suitable for the dyeing of polyamide fabrics for the automotive and swim suit trade. The Vialon Fast Dyestuff assortment has been especially developed for utmost fastness requirements on polyamide fabrics.

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SANDOZ, INC
61 Van Dam St
New York 13, NY

Artisil® Direct Blue BSR New

An improved blue disperse dye for use on acetates and other synthetic fibers. Fastness properties equal those of Artisil Direct Blue BSR, but the new product shows improvement in dispersing, and less tarring.

Brilliant Alizarine Light Blue 3FR

This new acid dye in the Sandoz Brilliant Alizarine series is of very bright shade, and is recommended for baby blue shades. It is stated that its high fastness to light on nylon and silk is also of interest.

Cuprofix® Grey C-BL paf

A direct dye for aftertreatment with Cuprofix #52 or copper sulfate. Distinctly neutral in tone, it may easily be shaded with other dyes in the Cuprofix line. The fastness ratings of the after-treated shades to light and wet processing are said to be good.

®Drimarene-Z Fiber-Reactive Dyes

For brilliant prints on cellulosic fibers, Sandoz this year introduced the Drimarene-Z line of fiber-reactive dyes. In addition to the advantages of this new class of dyestuffs, Drimarene-Z dyes are said to be achieving particular success for the ease with which the unfixed portion of the dye may be washed out, leaving a very clean ground. Dyes in the Drimarene-Z line include the following:

Drimarene Red Z-2B paf
Drimarene Red Z-RL paf
Drimarene Scarlet Z-GL paf
Drimarene Orange Z-G paf
Drimarene Yellow Z-3GL paf
Drimarene Yellow Z-4GL
Drimarene Blue Z-RL paf
Drimarene Navy Z-BL paf
Drimarene Turquoise Z-G
Drimarene Black Z-BL paf
Drimarene Grey Z-GL paf

®Drimarene-Y Fiber-Reactive Dyes

For use in pad applications, these reactive dyes offer advantages similar to those of the Drimarene-Z printing reactives. The line includes:

Drimarene Red Y-2B paf
Drimarene Red Y-2GL paf
Drimarene Scarlet Y-GL paf
Drimarene Orange Y-G paf
Drimarene Yellow Y-3GL paf
Drimarene Yellow Y-4GL
Drimarene Blue Y-RL paf
Drimarene Navy Y-BL paf
Drimarene Turquoise Y-G
Drimarene Black Y-BL paf
Drimarene Grey Y-GL paf

Foron® Brilliant Blue GFLN ultra-dispersed Pat

Brighter in shade, and faster to light than the widely used Foron Blue GFL ultra-dispersed Pat, this new blue disperse dye also provides improved dispersibility, and greater stability for dyeing at the boil. Recommended for acetate, acrylic, triacetate, and polyester fibers.

Lanasyn® Brilliant Red RL paf

An interesting yellowish red shade, this new milling red is suitable for dyeing wool, silk, and polyamide fibers from a neutral or weakly acid bath. Highly recommended for shading Lanasyn dyes. Its high solubility makes it of interest for printing, including vigoreaux printing. It is claimed to be very fast to light and mill processing, particularly milling and carbonizing. It is stated that it withstands finishing processes well, is dischargeable, and is fast to cross dyeing.

Printofix® Resin-Bonded Pigments

Introduced for use in printing and padding, these pigment colors permit the printer or dyer to produce brilliant shades said to possess improved fastness to washing, drycleaning, and crocking. They are also said to be noteworthy for strength, compatibility and lightfastness. The colors available at present are as follows:

Printofix Blue AG
Printofix Blue OG
Printofix Green AB
Printofix Green OB
Printofix Navy AR
Printofix Navy OR
Printofix Red AB
Printofix Red OB
Printofix Scarlet AY
Printofix Scarlet OY
Printofix Yellow AG
Printofix Yellow OG
Printofix Yellow A2G
Printofix Yellow O2G

*Registered trademark

VERONA DYESTUFFS
Spri..gfield Rd
Union, NJ

Sirius Supra Blue BRL

The main features of this blue are said to be the relatively bright shade, good fastness to light, and good money value. The lightfastness of this product is not affected by the resin finishes in normal use and the shade turns only slightly greener in most cases. Moreover, this product is said to possess very good solubility.

Sirius Supra Yellow GRLL

A new fast-to-light direct dyestuff said to be distinguished by outstanding lightfastness, and at the same time, very good leveling properties. Moreover, the solubility of this product is said to be excellent.

Veranthrene* Yellow F3GC Powder Ultrafine

This is a new homogeneous vat yellow claimed to be of extremely high lightfastness with excellent level dyeing properties. The lightfastness of this product after resin treatment (including reactant resins) is even slightly improved. Moreover, this product is said to possess excellent all-round fastness properties. It does not cannibalize blues in green combinations. So far this product is only available in powder form, but a paste type is expected at a later date.

*Registered trademark

EQUIPMENT

ABRAX INSTRUMENT CORP
179-15 Jamaica Ave
Jamaica 32, NY

Abrax Pipe Thermometer

A new pipe thermometer that clips to steam, water, refrigeration gas and other pipes by means of twin spiral clips supplied with each instrument. The instruments reportedly can be attached or removed from the pipes in seconds and require no alteration of the pipes. This factor is said to eliminate any need for branching or drilling. The thermometers are precalibrated to counteract the possibility of error through heat losses of radiation or convection.

They can be used for all pipes up to 3½" in diameter. The dials are 2½" in diameter, silvered, with black figures and polished chrome casings. The thermometers are graduated 2° divisions.

Abrax Pipe-Fitting Thermometers come in two temperature ranges: Model No. APFT 460 for the range from plus 32° to 320°F and Model No. APFT 461 for the colder ranges of minus 14° to plus 134°F. The price of either instrument is $12.95 each.

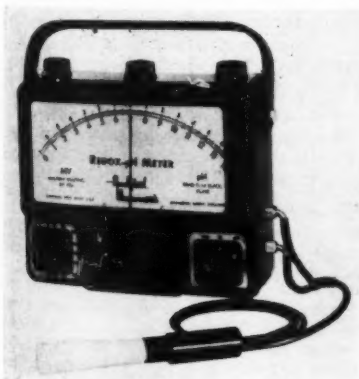
Literature available.

* * *

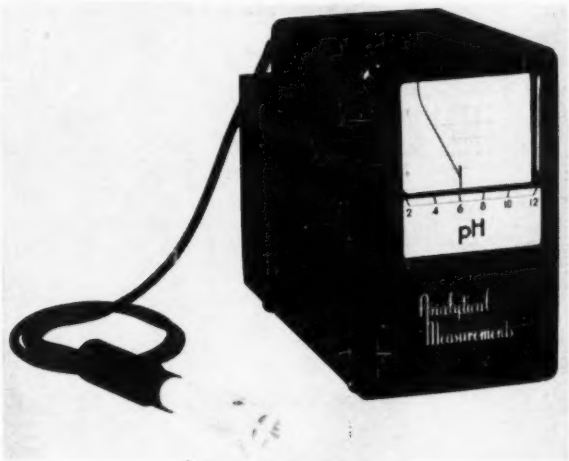
ANALYTICAL MEASUREMENTS, INC
585 Main St
Chatham, NJ

Redox-pH Meter

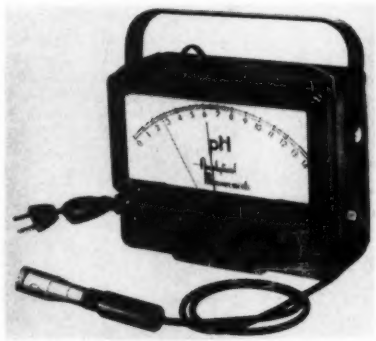
Said to be of special usefulness in dyehouses to assure more uniform dyeing results, the new Analytical Redox-pH Meter reportedly provides simultaneous millivolt and pH readings without changing electrodes. It is said to offer full, continuous 0-14 pH scale with .02 pH readability; millivolt range minus 1400MV to plus 1200MV, with 2MV readability; temperature compensator 0-100°C; Large 7" scale. Line operated, yet lightweight and portable; continuously indicating. Features the Analytical polyethylene-protected probe unit. Can perform oxidation-reduction, Karl Fischer and pH titrations.



Analytical Redox—pH Meter



Recording pH Meter



Big-scale pH Meter

Recording pH Meter

Analytical Measurements describes this unit as "the world's first recording pH meter, providing a continuous, permanent, record of pH changes." For use in both the laboratory and production, this instrument combines a pH meter and a strip chart recorder. Has the Analytical polyethylene-protected probe unit. Line operated, portable. Strip chart recorder contains a 63-ft roll of chart paper that will last for 31 days at one inch per hour. Reportedly sells for less than many, if not most, pH meters alone.

Big-Scale pH Meter

For general use in the dyehouse, this unit features a 7" scale, 0-14 pH. It is said to be simple to read pH values within .02 pH. Line operated, portable. Can be used wherever standard 115 volt AC outlet is available. Equipped with the Analytical polyethylene-protected probe unit that permits the user to bring the meter to the sample, a fact which is said to greatly extend the usefulness and versatility of this instrument. Priced at $145.00, FOB, Chatham, NJ.

* * *

ATLAS ELECTRIC DEVICES CO
4114 N Ravenswood Ave
Chicago 13, Ill

Crockmeter

The Model CM-1 is an improved instrument providing closely controlled test conditions in evaluating colorfastness to wet and dry rubbing.

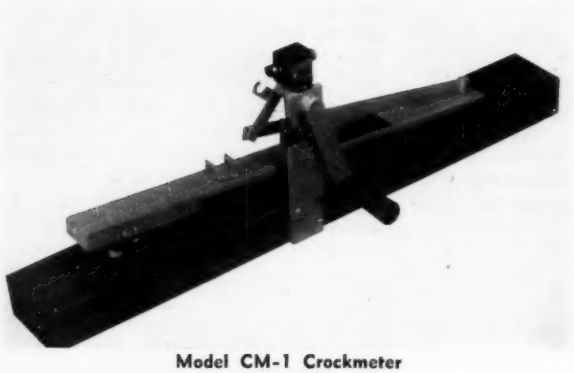
Fade-Ometer* and Weather-Ometer*, Xenon-Arc Types

These machines for accelerated lightfastness and weathering tests employ a 6000-watt water-cooled xenon-arc lamp having a spectral distribution very close to that of sunlight. Test results in these machines can thus be expected to correlate well with actual service tests.

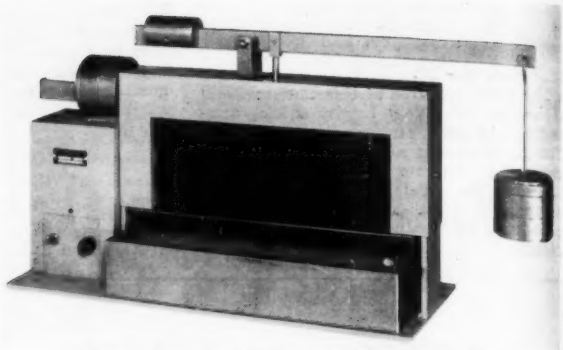
Laboratory Wringer and Padder

The Model LW-1 is a standardized wringer for laboratory use providing accurate control of pressure, hardness and speed of rollers. Accessories are also

*Registered trademark

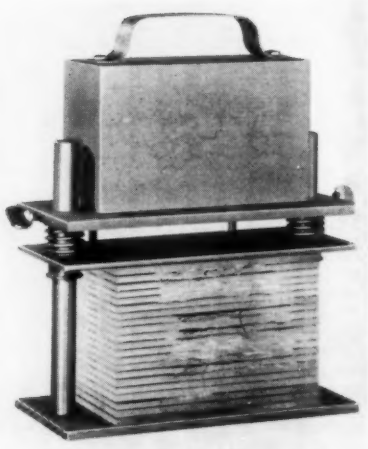


Model CM-1 Crockmeter

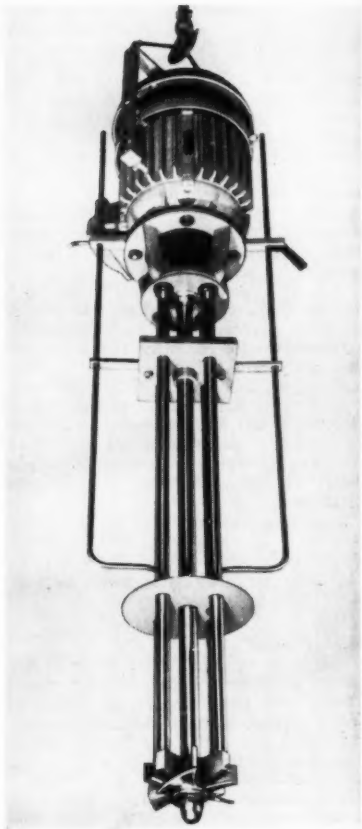


Model LW-1 Laboratory Wrinker and Padder

Model 60-WR Xenon Arc Weather-Ometer



Model PR-1 Perspiration Tester



Open turbine mixer

Model LHD-HT High Temperature Launder-Ometer

available which permit its use as a laboratory padding unit.

Launder-Ometer*, High-Temperature Type

The Model LHD-HT with high-pressure containers can be used for dyeing at temperatures up to 300°F as well as for standard washfastness and drycleaning tests.

Perspiration Tester

The Model PR-1 is an improved and inexpensive instrument providing better control of test conditions in colorfastness to perspiration, water, etc, tests.

*Registered trademark

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BARRINGTON INDUSTRIES, INC
185 Union Ave
Providence 9, RI

Convertible, Homogenizing Mixers

A line of high-speed, high-shear, homogenizing mixers from laboratory models of ¼ and ⅝ HP to production units of more than 1½ HP to 20 HP with capacities from ½ pt to more than 3,000 gallons.

The mixers may be used as closed turbine mixers, to mix, emulsify, and homogenize liquids in liquids, disperse solids in liquids, deaggregate and deflocculate solids.

When used as open turbine mixers, they are adapted to break the structure of gels, and mix highly thixotropic materials.

These mixers move the liquid vertically, from the bottom of the vessel upwards with the minimum of foaming.

Special foam arresters are available to eliminate any foaming of liquids which are low in viscosity and are extremely prone to foam.

Textile industry applications include: printing pastes and emulsions, starch and gum dispersions, yarn sizes, dye dispersions, finishing emulsions, etc.

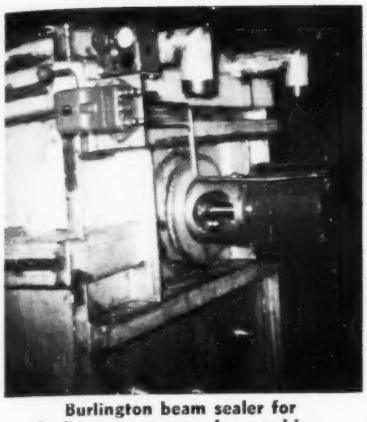
Literature is available.

* * *

BURLINGTON ENGINEERING SALES CO, INC
Graham, NC

Beam Sealer—Pneumatic

The Burlington pneumatic beam sealer for Burlington tricot dye machines is said to present a great improvement over the hand-wheel operated-dead set sealer normally furnished. In addition to making a rapid opening and closing of the gasket seal against the perforated beam end, the pneumatic sealer reportedly allows for expansion and contraction of the machine and beam without cutting or damage to the gasket. One user claims a seven-minute saving in time per loading and unloading per machine. The pneumatic sealer is offered as optional equipment with the Burlington pressure-



Burlington beam sealer for Burlington pressure-dye machines

dye machine, or can be furnished for easy replacement of existing hand-wheel seals.

* * *

CUSTOM SCIENTIFIC INSTRUMENTS, INC
541 Devon St
Kearny, NJ

Chlorine Retention Apparatus

Model CS-121 was developed by the American Cyanamid Company. The purpose was to allow one operator to run 12 tests simultaneously with the greatest amount of precision and reproducibility. The apparatus consists of a bath that is agitated and temperature controlled. In this bath are two rows of six metal beakers. Each beaker has a drain. In each beaker is a finger or agitator working off a master arm to avoid localized heating and to assure proper agitation. The unit is also equipped with a washing nozzle.

The machine has been designed for running AATCC Tentative Test Method 92-1958 "Damage Caused by Retained Chlorine."

Literature available.

Filling Power Apparatus

Model CS-114 is intended for determining the space filling capacity of bulk fiber filling materials, such as feathers and down. The apparatus consists of a rigid phenolic bonded paper cylinder; a piston to give an ultimate pressure of 0.00210 ± 0.00001 pounds per square inch; a measuring device with a vertically fixed centimeter scale; and a fluffing device.

(Cf Military Specifications MIL-F-5652C "Feathers and Down, Waterfowl.")

Quil-Chek

Model CS-115, developed by West Point Mfg Co, will automatically pass or reject quills based on the quills runout. The range of quills that the unit will handle is from 7-⅜" to 9-½" in length. The purpose of the Quil-Chek is to reject quills above any predetermined runout figure to eliminate problems in production. The unit may be fed from a hopper by quill manufacturers and from existing lines in the mill or by mill men.

Literature available.

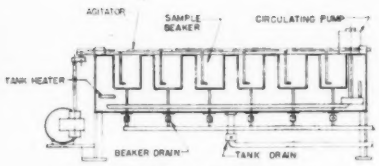
* * *

DESPATCH OVEN CO
925 Plymouth Bldg
Minneapolis 3, Minn

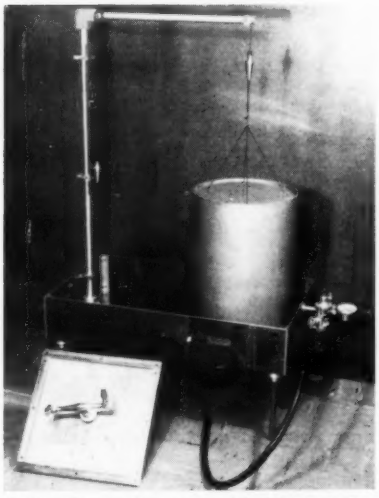
Heaters for Gas and Electric Fuel

A new line of heaters designed for "do-it-yourself" applications in the textile and other industries.

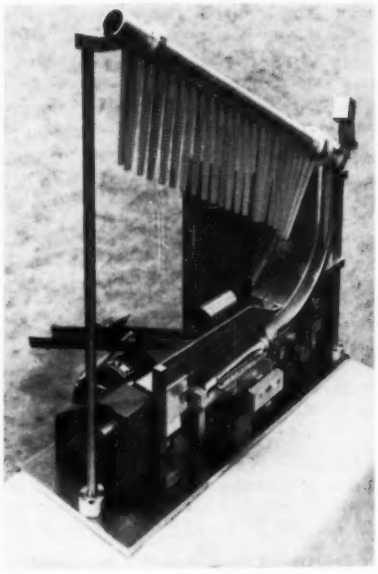
For use in drying, curing and other processes, the heaters employ gas, oil or electricity and are rated from 150 thousand to 3 million btu and 8 to 360 kw.



Chlorine Retention Apparatus Model CS-121



Filling Power Apparatus, Model CS-114

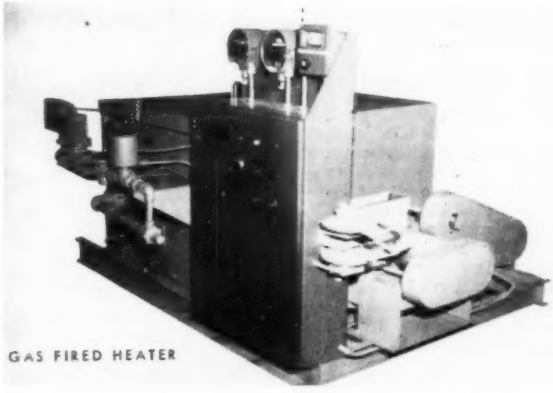


Quil-Chek, Model CS-115

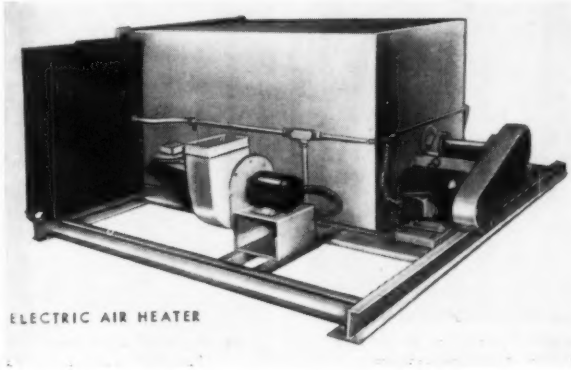
The new line reportedly provides up to 900°F delivered air when gas or oil is used, and 550°F delivered air with electricity.

The heaters are available singly for custom-engineered applications, or can be had in complete packaged systems. Despatch also continues to offer specially designed systems and components according to specification.

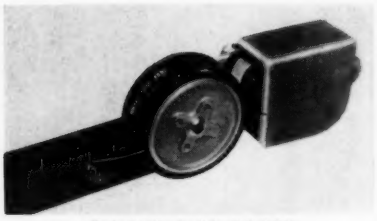
For complete data on the heaters, Despatch offers free bulletins 210-3 and 210-4.



GAS FIRED HEATER



ELECTRIC AIR HEATER



Fabri-Mark Model 100

FABRI-MARK CORP
P O Box 7065, Roseville Sta
Newark 7, NJ

Fabri-Mark Printer

A virtually cost-free way to identify material as to content, color, size, lot number, etc.

Easily attached to any machine on which material is fed in a continuous belt or web, Fabri-Mark Model 100 printing attachment places a sharp, indelible identification at regular intervals on selvage or on any other part of the material.

Because it is driven by the machine to which it is attached or by frictional contact with a moving web, the Fabri-Mark printer reportedly operates at normal production speeds, requires minimum maintenance and needs no additional power output.

The Fabri-Mark printer also features quick change printing and inking cylinders for different messages or printing ink colors. Special inks are said to be available for printing on hard-to-register surfaces or for printing in red, blue, green, black, violet and yellow. Inks are reported to be fast-drying and free from smudge or moisture.

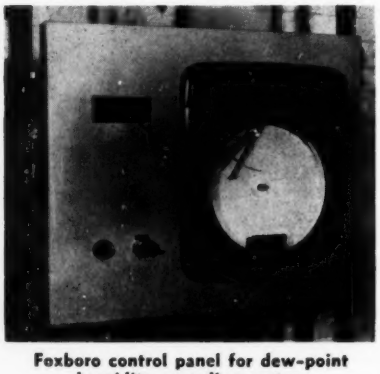
Literature available.

* * *

THE FOXBORO CO
Foxboro, Mass

Laboratory Air Condition Recording and Control

Panel-mounted two-pen recorder, optionally equipped with control. System has been engineered for use in laboratories where humidity conditions must be precisely maintained. Dewpoint (absolute humidity) is measured by Foxboro Dewcel element, which is said to be unaffected by ambient temperatures, is twice as sensitive to humidity changes as a wet bulb, and requires no maintenance other than occasional cleaning to remove dust and lint accumulation. Dry bulb temperature is measured by filled thermal system to within 0.5°F accuracy.



Foxboro control panel for dew-point humidity recording system

Dolly Washer Control System

By automatically operating the entire washing cycle, the Foxboro Dolly Washer Control System is said to improve the quality of cloth, increase production, assure uniformity of treatment, conserve processing materials, and simplify the operator's job. It programs the several scouring and rinsing operations, adds scouring chemicals, regulates rinse water temperature, controls washer at low level for scouring and high level for rinsing. The entire cycle is carried out on a precisely timed basis by panel-mounted control system which also produces a complete record of the washing operations.

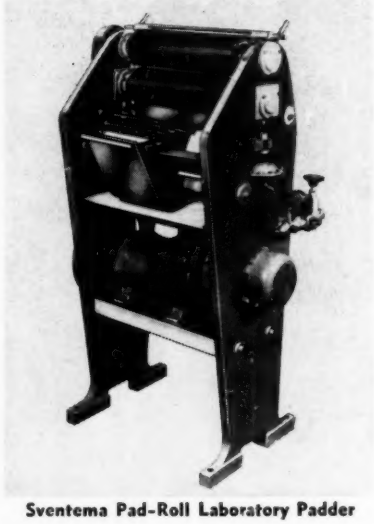
* * *

ERNEST L FRANKL ASSOCIATES, INC
515 Madison Ave
New York 22, NY

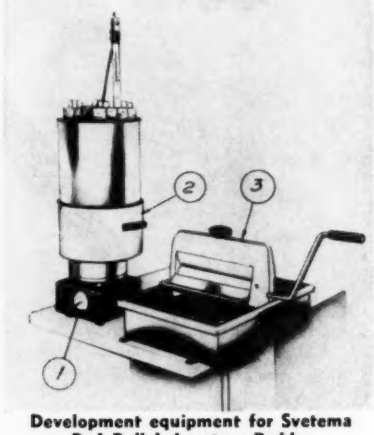
Svetema Pad-Roll Laboratory Unit

This new unit features a laboratory padder and developing equipment for exact laboratory determination of color values and shades to be reproduced in the Svetema Pad-Roll Dye Unit.

The Laboratory Unit treats the samples under the same conditions as to absorption, immersion time, etc, as the production unit, and therefore shades developed in the Laboratory Unit will be matched in the production unit.



Sventema Pad-Roll Laboratory Padder



Development equipment for Svetema Pad-Roll Laboratory Padder

Improved Svetema Pad-Roll Bleaching Unit

This improved unit is suitable for peroxide and especially chloride bleaching. It has chambers of fiber glass walls so that no corrosion can occur.

* * *

JAMES HUNTER MACHINE CO
North Adams, Mass

Pressure-Lok Machine

This patented machine is designed to allow the continuous processing of fabrics in open-width form at temperatures above the conventional boiling point. A unique pressure seal allows fabric to be treated with saturated steam at pressures up to 50 pounds. The unit pictured is a laboratory machine designed for the processing of fabrics 12" wide. Of interest for high-temperature bleaching, high-temperature dyeing and any wet processing where temperatures above the conventional boiling point may be desirable.

* * *

MANUFACTURERS ENGINEERING & EQUIPMENT CORP
York and Sunset Lane
Hatboro, Pa

Colormaster Differential Colorimeter

For measurement of color, the new Colormaster features an adjustable zero attachment for standardizing the instrument. In addition, the instrument is claimed to feature the highest accuracy and precision of any type of differential colorimeter commercially available.

Readings are given in terms of green, red and blue reflectance values, or X, Y and Z. Rapid computations to L, a and b may be readily made with charts or the Colormaster computer.

For complete information write for Bulletin No. CM-1200.

* * *

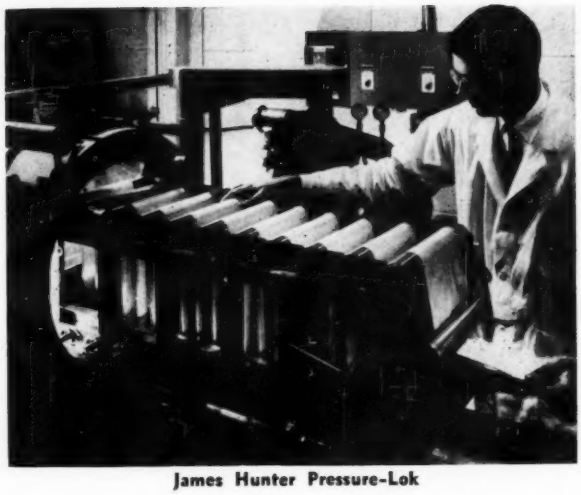
MARKITE CORP
155 Waverly Pl
New York 14, NY

Linear Motion Potentiometers

A new series of ½" diameter linear motion potentiometers developed for flow controls and instrumentation. A potentiometer can be described as an electromechanical device which divides AC or DC electrical input voltage in accordance with the position of its shaft.

The Markite precision units are said to be particularly applicable in designs with inherent space limitations and high performance, continuous-duty requirements. They can be utilized as feedback devices in valve stem indicators for fluid flow rate and pressure controls to insure manufacturing quality control standards. They can also be used as instrument transducers for fluid metering and liquid level indicators, and for speed, feed, thickness and process gauging controllers on rotary presses, con-

Markite Potentiometer



James Hunter Pressure-Lok

verters and other manufacturing equipment.

In Markite potentiometers, the resistive element embodies a solid raised track of conductive plastic integrally comolded, together with terminals and taps, to an insulator base of high-temperature phenolic resin of matched thermal expansion coefficient. Reportedly affording virtually infinite resolution and extraordinarily long life, the conductive plastic track can be provided with a wide range of electrical characteristics, and is said to be impervious to attack by most common chemicals.

Each potentiometer in this series, which currently covers Markite catalog Type 3239 and 3209, offers electrical output accuracies (independent linearities) of ± 0.5% or better, and is available with element resistances ranging from 1K to 20K ohms, it is claimed. Type 3239 has a shaft stroke length of 1.587", and Type 3209, a shaft stroke length of .600". Other stroke lengths can be provided by Markite to meet special requirements. Shaft and ½" diameter cylindrical case are fabricated of stainless steel, and overall case lengths for Type 3239 and 3209 are 4.694" and 2.226" respectively. The potentiometers are designed to withstand as much as 1000v rms without dielectric failure.

* * *

MOUNT HOPE MACHINERY CO, INC
Taunton, Mass

Textometer

This unit is said to automatically measure and control residual moisture of cloth coming off slashing machines, tentering frames and driers.

The Mount Hope Textometer will not only improve quality of the cloth, but contribute substantially to lowered operating costs, it is claimed. It reportedly records and automatically controls moisture variation in the cloth no matter how slight. Moisture content is measured by electrodes employed as sensing elements which pick up the electrical value corresponding to the amount of moisture present in the fabric. Conditions are transmitted to the Textometer in the form of electrical impulses and visually recorded on one of the three panels of the unit's Tel-indicator.

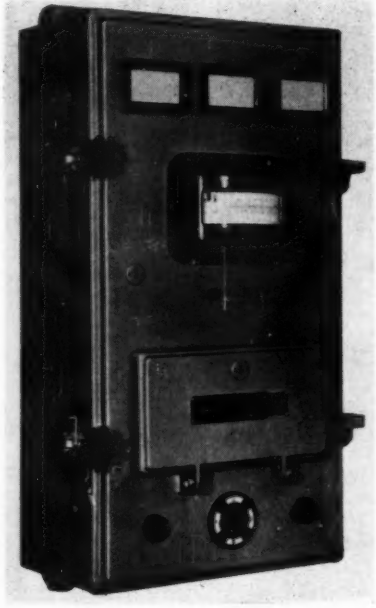
It is claimed that, in many instances, it has been found that production on certain fabrics can be increased. Usually the operator judges the dryness of a fabric by feeling it with his hands. When the cloth is hot from the drier it is difficult to judge the moisture content. To be sure that the fabric is dry, the machine speed is held down, whereas if the moisture content is known, the machine could in most cases be speeded up many yards per minute.

Equipped with an automatic control unit, the Mount Hope Textometer adjusts machine speeds. These variations, slowing down to permit longer drying, speeding up to lessen drying, are said to maintain prescribed levels of moisture content at all times.

Optical accessories are available to record in graph form changes in machine speeds, quality of the material, the moisture content of any particular run.

The Mount Hope Textometer reportedly may be used with the sheerest fabrics or heaviest materials.

Literature available.



Mount Hope Textometer

* * *

"National" Roll Predryer

THE NATIONAL DRYING MACHINERY CO
Lehigh Ave and Hancock St
Philadelphia 33, Pa

Roll Pre-Dryer

This unit is designed to greatly increase capacity of existing drying equipment, with minimum additional floor space. Acts as predryer to take off substantial amount of initial moisture. Provides tensionless drying of open material. Gas or steam heated, in any required size or capacity. Can be mounted overhead of padder and tenter frame or other existing equipment.

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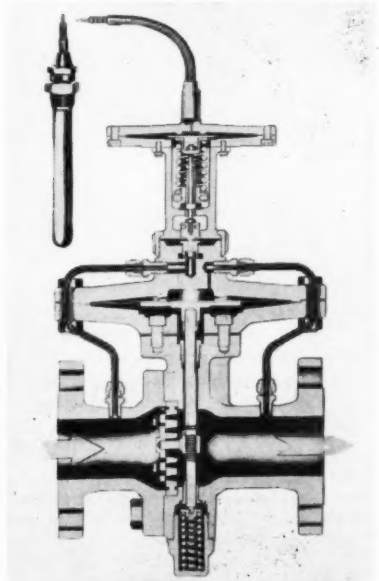
OPW-JORDAN CORP
6013 Wiehe Rd
Cincinnati 13, O

New Piloted Temperature Control Valves in ¼"-2" Sizes

For sensitive control of rugged pressure drops. Used in industry to control temperatures of instantaneous heaters, oil preheaters, storage heaters and process heating and cooling applications.



OPW-Jordan Piloted Temperature Control Valve #1180

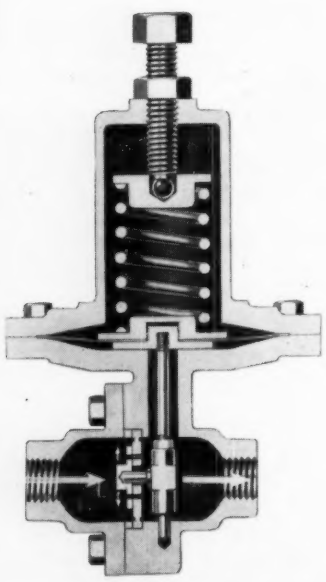
Sliding Gate, self-lapping, self-cleaning seats are said to insure positive tight shut-off during lock up and accurate regulation during operation. Available from stock in ductile iron (#1180) and bronze (#1280) bodies. Reportedly suitable for pressures to 250 psi and temperatures to 500°F. Ten temperature control ranges from 35-450°F. Capacities from 12 to 6600 pounds of steam per hour or one to 175 gallons of water per minute, depending on pressures. Said to be capable of accurate control with a pressure differential across seats of 125 psi. Suitable for heating or cooling applications. Thermal systems available in copper, stainless steel, carbon steel, monel, lead coated or plastic coated, according to need.

Ask for Bulletins SRBc 64-59 and JNP-2.

Low Flowing Sliding Gate Seats

Now available for regulators and control valves from OPW-Jordan for ¼" through 3" sizes. Capacities to suit individual requirements, eg, the 1-¼" body size can have capacities of 1-¼", 1", ¾", ½", ⅜" or ¼", as required. Low flow seats are used where initial requirements are for a low flow but later needs are for high flows, strength of full line size valves is needed but low flow is required, and to replace seats in an oversized valve body. Standard Sliding Gate seats are stainless steel with industrial hard-chrome finish. Seats are said to be self-lapping and self-cleaning in operation and give tight shut-off.

Ask for Bulletins JNP-4, JNP-5, J160-1, and SRBc 2-60.



Sliding Gate Regulator

Stainless-steel Loading Assemblies

Used widely in industry for bulk loading or unloading wherever fluids, chemicals, or other products require stainless-steel piping and stainless-steel swivel joints. Loading assemblies are pre-engineered facilities designed to speed loading or unloading operations. The stainless-steel loading assembly utilizes Series 7400 stainless-steel swivel joints and stainless-steel piping. Spring

OPW-Jordan Swivel Joint

balance style in 2-½", 3" and 4" sizes. Counter weight style in 2", 2-½", 3" and 4" sizes.

Write for Bulletin SRBc 68-59.

Combination Temperature and Pressure Regulator

Used to control temperatures and pressures with only one regulator in the main line. Reportedly eliminates the need for two separate installations, simplifies piping, gives better control and is less costly. Anticipates temperature change through pressure-sensing mechanism to give accurate control. Sliding gate seats. For heating or cooling applications. Available in ½"-2" sizes with screwed ends, standard body materials ductile iron (Model 1168) or bronze (Model 1268) from stock. Suitable for pressures to 250 psi and temperatures to 500°F. Controls temperatures from 35-450°F with 10 ranges and pressures from 2-200 psi with two ranges. Thermal systems available in wide variety of materials.

Write for Bulletin SRBc 4-60.

#1168 Combination Temperature and Pressure Regulator

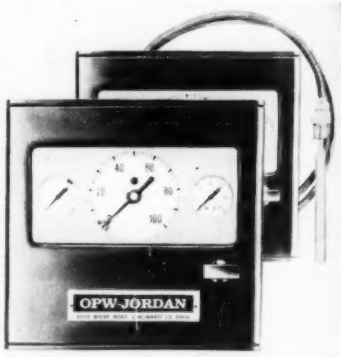
Loading Valves

One #417 or #418 Loading Valve from OPW-Jordan reportedly can handle a wide range of liquids and chemicals. Discs of Neoprene, Compar, Silicone, Teflon and Viton-A are available for the

OPW-Jordan #417 Loading Valve

first time, in addition to the standard Buna-N disc usually furnished. By replacing the Buna-N disc with one of the new discs, a standard Loading Valve can be adapted to many other fluids, it is claimed. The valves are claimed to prevent shock, ending costly line damage, yet holding after-flow to a minimum. They are available in 2", 2½", 3" and 4" sizes in aluminum or bronze.

Write for Bulletin JF-49.



OPW-Jordan Controllers

Pneumatic Pressure and Temperature Controllers

Controlling pressures up to 10,000 psi, and temperatures from —125° to 1000°F, OPW-Jordan Controllers are said to be simple, self-contained and to give precise response (1% middle half of scale). Standard features include 1-100% proportional band, manual reset, differential gap action and on-off snap action. Remote set-point, control by-pass and automatic reset or rate are available. Temperature controllers are available in both indicating and recording models. Transmitters and recorders round out the line.

Write for Catalog J-C.

PREMIER INDUSTRIAL CORP
4415 Euclid Ave
Cleveland 3, O

Premier High-strength Carriage Bolts

A line of carriage bolts which are claimed to be twice as strong as any other carriage bolt now on the market.

The company states that Premier bolts have a tensile strength of over 130,000

(continued on page 118)

SOME ASPECTS OF CARRIER DYEING

H MARTIN FRIEDMAN
Technical Director
Emkay Chemical Co
Elizabeth, NJ

INTRODUCTION

THE flow of research and development continues to produce additional new man-made fibers. These new fibers alone, and in various combinations with others, give interesting effects. Many exhibit "wash-and-wear" as well as other desirable properties. They continue to attract popular demand from the consuming public.

Commercial dyeing of some of these fibers is done either at high-temperature conditions (250°-F), as are developed in closed pressurized vessels; or at temperatures at or just below the boil, with the use of carriers as dyeing assistants in the dyehouse containing becks and jigs.

Many hundreds of chemical compounds have been tested as dye carriers, but only a few have found commercial acceptance. When Dacron polyester fiber was offered to the trade, the search for good dyeing methods was intensified. Carmichael (*1*), after a study of many organics, selected tetrahydronaphthalene as the dye carrier for his investigation. Du Pont researchers (*2*) have mentioned o-phenylphenol, trichlorobenzene, biphenyl, methyl salicylate, and benzoic acid as dye carriers, and discussed their advantages and faults. Ivey (3) discussed the carrier dyeing of the Kodel polyester fiber. He stressed the importance of proper dye carrier selections and the methods used for these dyeings. Choquette (*4*) used monochlorobenzene under adequate conditions. Sommar (*5*) stated that methyl salicylate is more effective for dyeing Darvan dinitrile fiber.

For the dyeing of Arnel triacetate, Fortess (*6*) used previously mentioned carriers for Arnel and Dacron blends. For dyeing of 100% Arnel, he used tripropyl phosphate, although others were listed. Salvin (*7*) discussed factors involved in producing satisfactory dyeings of Arnel blends. Salvin and others (*8*) made a study of the factors involved in carrier dyeings of some of these new fibers.

Some of the organic aromatics that are used commercially as dye carriers are listed below. They are also available as proprietary products, where they are usually combined with dispersing or emulsifying agents.

The comparative carrier action in the dyeing of Dacron Type 54, polyester fiber, Arnel triacetate fiber, and Kodel polyester fiber with different types of commercial dye carriers was determined.

The chemicals used in these commercial carriers (o-phenylphenol, biphenyl, methyl salicylate, butyl benzoate, trichlorobenzene and o-dichlorobenzene) were mixed in various combinations with an emulsifier base, Emkalar Base E-55.

In another series of dyeings, the carrier action of these blends of carrier chemicals with emulsifier base was also determined.

Effect on shade depth of 1) carrier concentration in dyebath, and 2) variation in ratio of carrier chemical to emulsifier was observed.

The potential savings available to the dyehouse using carrier chemicals of 100%-active concentration in combination with an emulsifier base, instead of prepared commercial carriers, is indicated.

---

o-phenylphenol
o-dichlorobenzene
trichlorobenzene
biphenyl
methyl salicylate
butyl benzoate

It may be of interest to note that, five years ago, the five carrier chemicals listed as of commercial value (*9*) were:

cresol
benzoic acid
monochlorobenzene
p-phenylphenol
o-phenylphenol.

Of these five, only one, o-phenylphenol, has maintained its position of practical value in the average dyehouse.

BACKGROUND

Carrier dyeing has developed along two lines. One of these has been the constant search for fast-dyeing techniques in the attempt to have a short dyeing cycle (two to four hours). Outstanding organic intermediates that have been used successfully for these purposes are:

o-phenylphenol
methyl salicylate
o-dichlorobenzene
trichlorobenzene.

The second line of approach calls for slow-striking dye systems that require a dyeing cycle two to three times as long to bring the fiber to the required shade. The achievement of level shades, higher production due to increased loads per dye machine, and maximum value from dyestuffs, chemicals, etc, is more easily obtained. Of interest for this type of dyeing techniques are biphenyl and butyl benzoate.

There are a number of factors besides the selection of the specific carrier system that can seriously slow down the dyeing process:

1) Partial, rather than complete removal of wax or size.

2) The chemical nature of the compounds used in the boil-off.

3) Heat setting of fabrics before dyeing.

4) Use of nonionic dispersants in the dyebath.

5) Working at less than optimum pH for dyestuffs used. (see Table II).

These can all adversely affect the shade depth obtained.

For the most efficient removal of wax or size, scouring with anionic detergents in combination with high-boiling aromatic solvents appears to leave fibers in a condition most favorable for good dyeing. Detergents of the nonionic type, if left in the goods after size removal and retained in the dyebath, act as retarding agents and materially slow down the dyeing rate. Heat setting of fabrics before dyeing usually requires substantial increases of dyestuff to ob-

OBJECTIVES

Empirical results indicate that the behavior of mixtures of carrier materials give unexpected results. Furthermore, the effects of surfactants in quantity and of different chemical types is still an area of ignorance.

The effect of one product on another in changing the amount of dye absorption requires study. The effect of balanced emulsification for proper particle size to enable the desired absorption of carrier and subsequent dyestuff build-up is highly empirical.

It is the aim of this paper:

1) to compare the carrier action in dyeing obtained with commercial carriers of different chemical types on some of the new hydrophobic fibers.
2) to check the feasibility of preparation of suitable carrier systems in the mill dyehouse, which will give satisfactory dye performance at lower cost.
3) to investigate some of the critical factors involved in the preparation and utilization of "do it yourself" carrier systems.
4) to present factual data which can be used as the basis for further study of the fundamental principles of the effect of emulsifying systems on carrier action.

If carrier chemicals of 100%-active content could be purchased and used by the dyehouse to obtain satisfactory dye shades instead of using prepared commercial carriers, indications are that costs for carriers can be reduced considerably. This added economy, when successfully utilized, could place the mill in an advantageous position in a highly competitive field.

EXPERIMENTAL

A series of dyeings of Dacron Type 54 polyester fiber, Kodel polyester fiber and Arnel triacetate fiber were made using two medium shades and two heavy shades. (See Table I).

LABORATORY PROCEDURE—In one series of dyeings, the following carrier chemicals were used in combinations with an emulsifier base, Emkalar Base E-55:

butyl benzoate
o-dichlorobenzene
trichlorobenzene
biphenyl
methyl salicylate
o-phenylphenol

Dyeings were made where the amounts of active carrier chemical in the dyebath were 1.25, 2.5, 5.0, 7.5 or 10 grams per liter. Where the chemical intermediate was a liquid, it was mixed with the emulsifier base and added to the dyebath. In the case of a solid carrier chemical, the water, active carrier chemical, and emulsifier base were mixed together and after boiling for a few minutes, added to the dyebath. A liquor ratio of 30 to 1 was maintained.

In another series of dyeings, prepared commercial carriers containing these ingredients were also tested in the same way. With the commercial carriers, concentrations in the dyebath ranged from 2.5 to 15.0 grams of commercial carrier per liter. A liquor ratio of 30 to 1 was maintained.

A 15-gram sample of the scoured fabric was entered into a 450-ml dye-

Figure 1

Relative color values with commercial carriers

TABLE I

Dyeings on Dacron 54, Kodel, and Arnel

Green	
CI Disperse Blue 3	— 1.8%
CI Disperse Yellow 3	— 1.0%
CI Disperse Orange 17	— 0.1%
Brown	
CI Disperse Orange 17	— 1.0%
Interchem Acetate Navy Blue NVYS	— 0.75%
Navy	
Celliton Fast Navy Blue BRA	— 5.0%
Black	
Celliton Fast Black BTNA	— 5.0%

TABLE II

Relative color value—Effect of pH on depth of shade

Carrier concentration (g/l)	*Dyebath pH* 6.5	9.0
5.0	70	50
7.5	80	50

TABLE III

Relative color values with commercial carriers

Commercial carrier (g/l)	Chemical type	Celliton Fast Navy BRA 5% Relative color values Dacron 54	Arnel	Kodel
No Carrier		20	70	30
Carrier A	methyl salicylate (modified)			
1.3		40	90	95
2.5		70	90	100
5.0		80	90	100
7.5		80	90	95
10.0		80	90	95
15.0		70	90	95
Carrier B	methyl salicylate			
1.3		40	90	80
2.5		45	95	85
5.0		50	95	95
7.5		80	95	100
10.0		90	95	100
15.0		100	95	100
Carrier C	trichlorobenzene			
1.3		40	95	80
2.5		80	95	100
5.0		90	95	100
7.5		100	95	100
10.0		100	95	95
15.0		100	90	90
Carrier D	butyl benzoate			
1.3		40	90	90
2.5		50	95	95
5.0		40	95	95
7.5		40	90	90
10.0		30	90	90
15.0		25	85	70
Carrier E	o-phenylphenol			
1.3		40	90	70
2.5		70	90	90
5.0		90	90	100
7.5		100	90	100
10.0		100	95	100
15.0		100	90	100
Carrier F	o-phenylphenol			
1.3		40	90	80
2.5		60	100	85
5.0		90	100	95
7.5		100	100	90
10.0		100	100	90
15.0		100	90	90

TABLE IV

Relative color values—Active carrier with emulsifier base

Active carrier (g/l)	Emulsifier base (g/l)	Celliton Fast Navy BRA 5% Relative color values Dacron 54	Arnel	Kodel
No Carrier		20	70	30
Methyl salicylate	Emkalar Base E-55			
2.5	1.25	80	100	70
5.0	2.50	95	100	95
7.5	3.75	100	95	90
10.0	5.00	100	95	90
O-Dichlorobenzene				
2.5	0.62	100	100	100
5.0	1.25	100	100	100
7.5	1.88	100	100	100
10.0	2.50	100	95	95
Butyl benzoate				
2.5	0.83	65	100	95
5.0	1.67	65	100	90
7.5	2.50	60	95	90
10.0	3.33	50	85	80
Biphenyl				
2.5	1.25	90	100	90
5.0	2.50	85	100	95
7.5	3.75	85	95	95
10.0	5.00	85	90	95
O-Phenylphenol				
1.25	0.94	60	90	80
2.50	1.88	90	100	90
5.00	3.75	90	100	95
7.50	5.63	85	95	95
10.00	7.50	80	95	95

TABLE V

Active carrier—Emkalar Base E-55 ratios

Active carrier chemical	by wt	Emulsifier base by wt	Water by wt
Methyl salicylate	1.00	0.50	none
Butyl benzoate	1.00	0.33	none
Trichlorobenzene	1.00	0.25	none
O-dichlorobenzene	1.00	0.25	none
O-phenylphenol	1.00	0.50	2.00
Biphenyl	1.00	0.50	2.00

bath containing the disperse dyes, and the prepared carrier or chemical intermediate mixed with emulsifier base added. The temperature was raised to just below the boil (205-210°F), and the material dyed at this temperature for one hour. After rinsing, the sample was scoured at 160°F for five minutes in 0.25% detergent solution, rinsed and dried. Color value was estimated visually by a panel of experienced colorists. The color values are listed in Tables III and IV. Data for the proportions of active carrier and emulsifier base are summarized in Table V.

EFFECT OF DYEBATH pH——A series of navy shade dyeings on Dacron Type 54, using a prepared methyl salicylate carrier, was made. The pH of the dyebath was adjusted to be either 6.5 or 9.0 by the use of a suitable phosphate. As seen in Table II, although the carrier concentration was increased from 5.0 grams to 7.5 grams per liter, when the dyebath pH was kept at 9.0, the build-up of shade was retarded. When the dyebath pH was adjusted to 6.5, normal shade development occurred. This follows the observation that a number of dispersed dyes show higher exhaustion at neutral or slightly acid pH.

DYEINGS WITH COMMERCIAL CARRIERS——Navy shade dyeings on Dacron Type 54, Arnel and Kodel were made in the presence of six different commercial carriers (see Table III and Figure 1).

Carrier A was a self-emulsifying methyl salicylate product. Carrier B was a methyl salicylate emulsion. Carriers C and D were self-emulsifying trichlorobenzene and butyl benzoate products respectively. Carriers E and F were paste and liquid o-phenylphenol products respectively.

DISCUSSION

DYEINGS WITH COMMERCIAL CARRIERS——Where Arnel and Kodel were being dyed, depth of shade was easily obtained with all of the commercial carriers. The concentration of carrier required was low; 2.5 grams per liter being sufficient in most cases.

For Dacron, differences in carrier action were easily observed. The butyl benzoate carrier produced dyeings that were approximately half-shade. As the carrier concentration was increased, no improvement in depth of shade was obtained. The reverse occurred, with shade development being lowered.

The two o-phenylphenol carriers (E and F) appeared to work in a similar manner. With five grams per liter carrier concentration, the shade depth was the same. As the carrier concentration was increased, shade depth was maximum at approximately 7.5 grams per liter and was not improved with carrier concentrations of 10 and 15 grams per liter.

The trichlorobenzene (Carrier C) carrier, gave similar results to those obtained with o-phenylphenol. At the five grams per liter concentration, and at the higher concentration levels, the results were similar. There was no color stripping observed at the 10- and 15-grams carrier concentration levels.

The two methyl salicylate carriers (Carriers A and B) showed some interesting differences. Carrier A, at the five-gram per liter carrier concentration, developed a fairly heavy shade. When the carrier concentration was increased to 10 grams and 15 grams per liter, further development of shade did not develop. As a matter of fact, at the 15-gram level, a slight color stripping action was seen. Carrier B at the five-gram per liter carrier concentration was apparently only half-shade. As the concentration was increased, shade depth developed further until maximum

shade appeared at the 15 gram per liter level.

DYEINGS WITH CARRIER CHEMICAL PLUS EMULSIFIER BASE——Navy shade dyeings on Dacron, Arnel and Kodel were made in the presence of five different active carrier chemicals. These carrier chemicals were methyl salicylate, o-dichlorobenzene, butyl benzoate, biphenyl, and o-phenylphenol. They were mixed with a suitable emulsifier, Emkalar Base E-55, before being added to the dyebath (see Tables IV, V and Figure 2).

As observed with the use of prepared commercial dyeings, the Arnel and Kodel fibers were similarly dyed to heavy shades with the active carrier chemicals-emulsifier base blends. In most cases, 2.5 grams per liter concentration of carrier chemical was sufficient to reach full depth of shade of the Arnel and Kodel fibers.

On Dacron, the methyl salicylate-emulsifier base systems required 5.0 grams per liter concentration of methyl salicylate to approximate full shade depth. Dyeings with higher concentration of the methyl salicylate in the dyebath (7.5 and 10.0 grams per liter) maintained full shade.

On Dacron, the o-dichlorobenzene-emulsifier base system developed deep color yield in the entire concentration (2.5 grams to 10.0 grams per liter). The emulsifier base blend with butyl benzoate gave shades which were approximately half-strength. The Biphenyl-emulsifier base at the 2.5 grams per liter active carrier concentration level produced almost full shade. Increasing the concentration up to the 10.0 gram per liter level of the biphenyl had no further visible effect. The o-phenylphenol blend with emulsifier base developed almost full shade at 2.5 grams per liter. As the concentration was increased to 10.0 grams per liter, no further development of shade was seen. This was contrary to the effect with the prepared commercial carriers of the o-phenylphenol type.

DYEINGS WITH VARIATIONS OF THE RATIO OF O-PHENYL-PHENOL-EMULSIFIER BASE——A study of Dacron dyeings was made where the ratio of o-phenylphenol to the emulsifier base was varied from 1.00 o-phenylphenol/1.00 emulsifier base down to 1.00 o-phenylphenol/0.25 emulsifier base. (See Table VI and Figure 3). The popular concentration used in many dyehouses for carrier dyeings is five grams per liter of an o-phenylphenol carrier. This is roughly equivalent

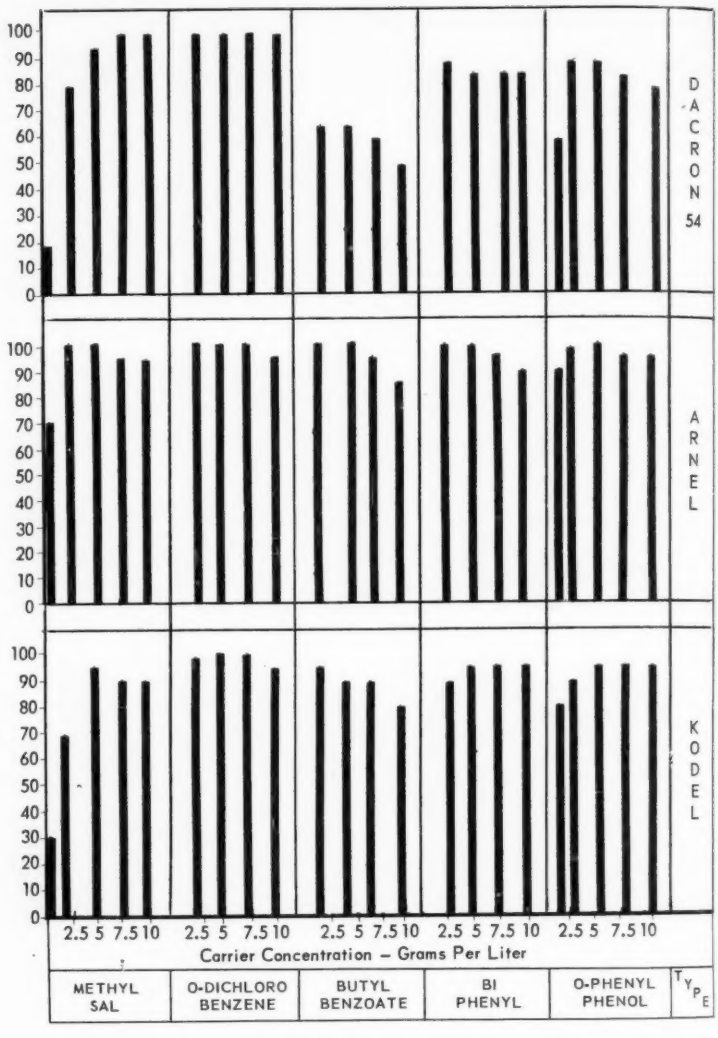


Figure 2
Relative color values
Active carrier with emulsifier base

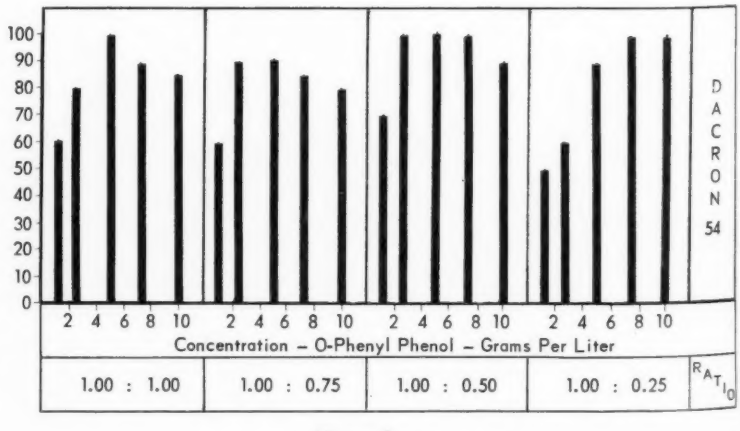


Figure 3
Relative color value on Dacron Type 54
Effect of o-phenylphenol/emulsifier ratio

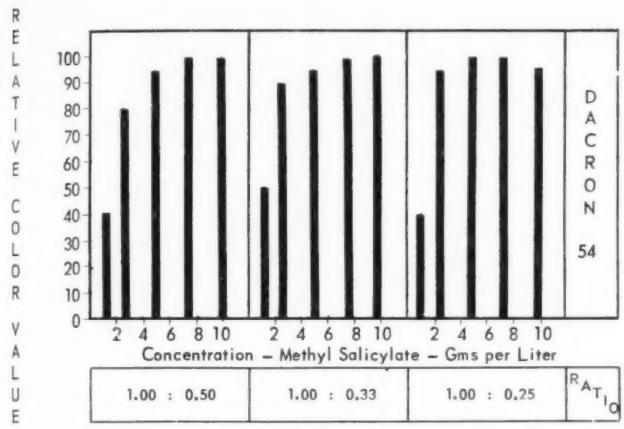


Figure 4
Relative color value on Dacron Type 54
Effect of methyl salicylate emulsifier ratio

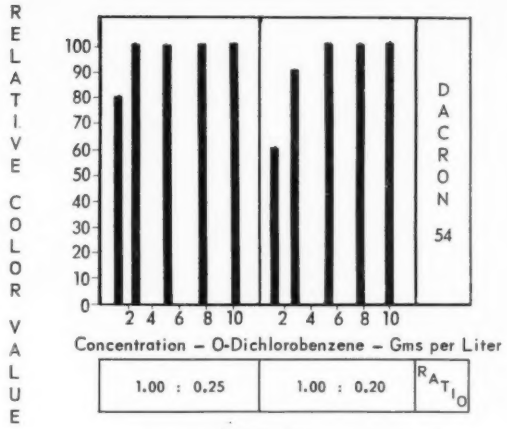


Figure 5
Relative color value on Dacron Type 54
Effect of o-dichlorobenzene/emulsifier ratio

TABLE VI
Effect of o-phenylphenol/emulsifier ratio on relative color value of Dacron Type 54

O-Phenylphenol Emulsifier base Ratio	*Celliton Fast Navy BRA 5% on Dacron Type 54*	
	O-Phenylphenol (g/l)	*Relative color value*
1.00 to 1.00	1.3	60
	2.5	80
	5.0	100
	7.5	90
	10.0	85
1.00 to 0.75	1.3	60
	2.5	90
	5.0	90
	7.5	85
	10.0	80
1.00 to 0.50	1.3	70
	2.5	100
	5.0	100
	7.5	100
	10.0	90
1.00 to 0.25	1.3	50
	2.5	60
	5.0	90
	7.5	100
	10.0	100

TABLE VII
Effect of methyl salicylate/emulsifier ratio on relative color value of Dacron Type 54

Methyl salicylate Emulsifier base Ratio	*Celliton Fast Navy BRA 5% on Dacron Type 54*	
	Methyl salicylate (g/l)	*Relative color value*
1.00 to 0.50	1.3	40
	2.5	80
	5.0	95
	7.5	100
	10.0	100
1.00 to 0.33	1.3	50
	2.5	90
	5.0	96
	7.5	100
	10.0	100
1.00 to 0.25	1.3	40
	2.5	95
	5.0	100
	7.5	100
	10.0	95

TABLE VIII
Effect of o-dichlorobenzene/emulsifier ratio on relative color value of Dacron Type 54

O-Dichlorobenzene Emulsifier base Ratio	*Celliton Fast Navy BRA 5% on Dacron Type 54*	
	O-Dichlorobenzene (g/l)	*Relative color value*
1.00 to 0.25	1.3	80
	2.5	100
	5.0	100
	7.5	100
	10.0	100
1.00 to 0.20	1.3	60
	2.5	90
	5.0	100
	7.5	100
	10.0	100

TABLE IX
Effect of biphenyl/emulsifier ratio of relative color value of Dacron Type 54

Biphenyl Emulsifier base Ratio	*Celliton Fast Navy BRA 5% on Dacron Type 54*	
	Biphenyl (g/l)	*Relative color value*
1.00 to 0.50	1.3	60
	2.5	90
	5.0	85
	7.5	85
	10.0	85
1.00 to 0.33	1.3	70
	2.5	95
	5.0	90
	7.5	90
	10.0	90
1.00 to 0.25	1.3	60
	2.5	100
	5.0	100
	7.5	95
	10.0	90

to 2.5 grams per liter of o-phenylphenol in the dyebath. At this strength, as the emulsifier concentration is lowered while the o-phenylphenol is kept at 2.5 grams per liter, the depth of shade increases to a maximum at the ratio of 1.00/0.50. At lower emulsifier content, the shade depth drops off somewhat.

DYEINGS WITH VARIATIONS OF THE RATIO OF METHYL SALICYLATE-EMULSIFIER BASE ——Navy shade dyeings on Dacron were made where the ratio of methyl salicylate to emulsifier base was varied from 1.00 methyl salicylate/0.50 emulsifier base down to 1.00 methyl salicylate/0.25 emulsifier base. (See Table VII and Figure 4). Dyeings made at the level of 2.5 grams per liter methyl salicylate showed that maximum color yield was obtained with the lowest amount of emulsifier base present (ratio of 1.00 methyl salicylate/0.25 emulsifier base). In the dyeings where the methyl salicylate content in the dye-

bath was increased to 10 grams per liter, full shade depth was maintained at all three levels of Emulsifier Base used.

DYEINGS WITH VARIATIONS OF THE RATIO OF O-DICHLOROBENZENE TO EMULSIFIER BASE ——In the selected range of ratios used of the o-dichlorobenzene and emulsifier base (see Table VIII and Figure 5), full shades of navy on Dacron were easily obtained in the concentration of 2.5 grams to 10.0 grams of o-dichlorobenzene in the dyebath.

DYEINGS WITH VARIATIONS OF THE RATIO OF BIPHENYL TO EMULSIFIER BASE —— Dacron dyeings were made in Navy shades where the ratio of biphenyl to emulsifier base was changed from 1.00 biphenyl/0.50 emulsifier base to 1.00 biphenyl/0.25 emulsifier base. (See Table IX and Figure 6). The carrier action of the biphenyl was quite sensitive to the amount of emulsifier base present in the dyebath. Maximum shade depth was obtained at the lowest level of emulsifier base used with the biphenyl. This type behavior was observed as a general characteristic in the range of 2.5 grams to 10.0 grams of biphenyl in the dyebath.

EFFECT OF EMULSIFIER CONTENT ON SHADE DEPTH——A tabulation of the comparison of depth of navy shade on Dacron obtained with the various carrier chemicals is listed in Table X and Figure 7. The four carrier chemicals were o-phenylphenol, methyl salicylate, biphenyl and o-dichlorobenzene. The ratio of carrier chemical to emulsifier was varied from 1.00 carrier chemical-1.00 emulsifier base down to 1.00 carrier chemical-0.20 emulsifier base. In these dyeings, the carrier chemical concentration in the dyebath was maintained at 2.5 grams per liter.

Except for o-phenylphenol, optimum shade depth was obtained when the ratio of carrier chemical to emulsifier base was maintained at the 1.00 to 0.25 level. Increasing the emulsifier base content in the dyebath caused a loss of shade depth. The o-phenylphenol showed a similar loss of shade depth with increased emulsifier base content past the optimum balance of carrier chemical to emulsifier base. The optimum balance found for the o-phenylphenol to emulsifier base was 1.00 to 0.50.

CARRIER ACTION —— Color value obtained is dependent on the quantity of carrier absorbed by the fiber, as pointed out by Salvin, Schuler and Roches and Gourmont (*8, 10, 11*).

Carriers are absorbed by the fiber from water solution in the same way that disperse dyes are absorbed.

Surfactants and/or emulsifying agents, depending on concentrations present and chemical types, can retard the pick-up of carrier. Since carrier action is dependent on quantity absorbed by the fiber, color value can be lessened.

Just as is observed in the case of disperse dyes, excess dispersing agents, especially of certain types, act as retarding agents, lowering exhaustion of dye by keeping dye solubilized in the dyebath, thereby acting as leveling agents.

(*concluded on page 117*)

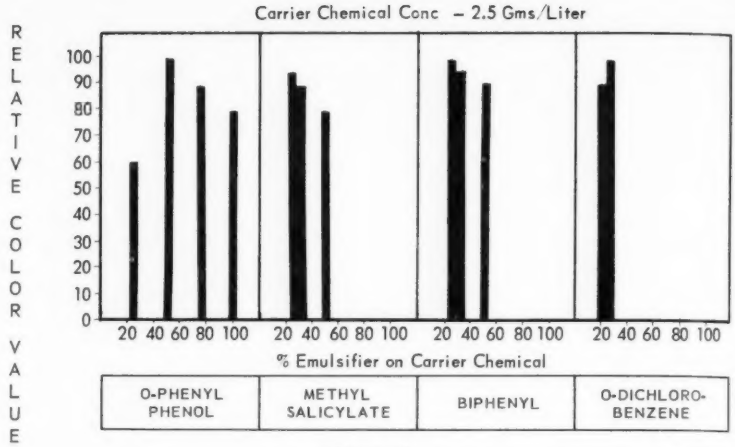


Figure 6
Relative color value on Dacron Type 54
Effect of biphenyl/emulsifier ratio

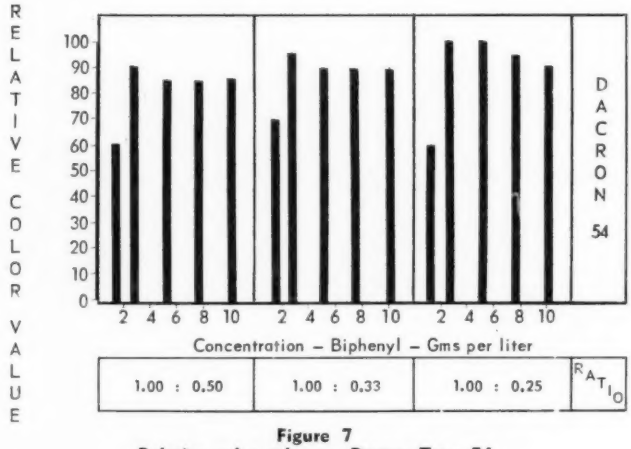


Figure 7
Relative color value on Dacron Type 54
Effect of carrier chemical/emulsifier ratio

TABLE X
Effect of carrier chemical/emulsifier ratio on relative color value of Dacron Type 54

Carrier chemical		*Emulsifier*	*Celliton Fast Navy BRA 5% on Dacron Type 54 2.5 g/l of carrier chemical Relative color value*			
Ratio			*O-Phenyl-phenol*	*Methyl salicylate*	*Biphenyl*	*O-Dichloro-benzene*
1.00	to	1.00	80	—	—	—
1.00	to	0.75	90	—	—	—
1.00	to	0.50	100	80	90	—
1.00	to	0.33	—	90	95	—
1.00	to	0.25	60	95	100	100
1.00	to	0.20	—	—	—	90

THE CONTINUOUS DYEING OF WOOL BY MEANS OF AN AQUEOUS TWO-PHASE SYSTEM

Coacervation as a New Concept in Textile Processing*

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INTRODUCTION

THERE can be no doubt but that continuous methods of processing have become a necessity in the textile industry. They are already in extensive use in cellulosic fiber processing, and have long been the subject of study in the wool trade, in view of the need to increase production and because of the shortage of skilled personnel.

We will not at this time go into the details of the history of continuous wool processing; suffice it to say that there are plants available at which wool, or wool in admixture with other fibers, can be dyed more or less continuously in the form of raw stock, slubbing or piece—including carpets. However, the results obtained hitherto have not been entirely satisfactory.

Let us examine briefly the methods used up to now.

1) CONTINUOUS PROCESS UTILIZING STEAM FOR FIXATION ——The method of fixation which immediately suggests itself in any continuous process is that of treatment in wet steam, analogous to that in textile printing. However, this system has not led to commercially usable results as yet. This is due to the hydrophobic nature of the intact surface scales or rather of the epicuticle. The concentrated dye solution, which has been applied either on a padding mangle or by a printing technique, migrates from the fibers at the surface of the goods into the interior. The outside fibers are quite inadequately dyed and this gives rise to the so-called "sandwich effect". This phenomenon is well known to printers who have had to work with unchlorinated wool—ordinary steam fixation generally produces unusable results. In 1958, Lemin (*6*) stated that there would be no prospects of finding a successful solution to the problem of dyeing wool continuously until skitteriness had been overcome.

2) CONTINUOUS PROCESS UTILIZING AN ACID "SHOCK" TREATMENT——In this process the goods are first padded with a concentrated dye solution and then run through a boiling acid bath, which brings about instantaneous fixation. Various people (*1*) have worked on this technique, including ourselves (*2*). The problem of "sandwich effects" does not arise since fixation takes place in an aqueous medium. On the other hand, the goods require a fairly long treatment at open width (5-10 min) in a hot acid bath. This treatment gives rise to additional technical difficulties owing to the different equilibrium concentrations of the dyes dissolved in the liquor. Moreover, it does not completely overcome skitteriness. As far as we know, this technique has not been adopted in the trade.

3) CONTINUOUS PROCESS UTILIZING A COMBINATION OF STEAM AND ACID "SHOCK" TREATMENT FOR FIXATION—— A suggestion recently put forward was to combine steaming with the acid "shock" treatment. A specific wetting agent also plays a vital part in the process, but it was not described. After a short preliminary steaming, this wetting agent prevents the dye from bleeding into the hot acid bath and ensures the production of dyeings free from "tailing". The process was described in detail by Ris and coworkers (*3*) and, before that, was dealt with by Hirsbrunner (*4*). Detailed formulations were given for the different variations of the process, and detailed suggestions concerning plant were also put forward. However, the constitution of the wetting agent, which plays such an important part in the process, was not disclosed.

Our own investigations have led us along a different path. It will be recollected that in the last few years two-phase systems have acquired considerable importance in textile finishing; for example, in pigment printing, dyeing with the assistance of a carrier, dyeing in the presence of organic solvents, etc, and, in many cases, these systems have been instrumental in producing special and highly interesting effects.

In our researches in the field of continuous dyeing we have come across systems which can be characterized as two-phase systems with miscibility gaps. A special class of these systems are the *coacervation systems* (*7*), which were first described in 1929 by a Dutch researcher. The difference between an aqueous coacervation system and other aqueous/liquid two-phase systems is that both phases consist mainly of water. However, it is generally accepted that textile finishers still consider water to be the best solvent.

The term "coacervation" is used in colloid chemistry to denote the separation of a colloidal system into two liquid isotropic phases. The concentrated phase is known as the "coacervate" and the more dilute phase as the "equilibrium liquid". As opposed to ordinary two-phase mixtures, the two phases are solutions in the same solvent, eg, water. The volume ratio of the two phases depends on the concentration of surface-active agent, the agencies bringing about coacervation (eg, electrolytes), the temperature, and other physical factors.

We have already pointed out the necessity of using a suitable wetting agent during padding and in the acid bath in our first patents (*2*) relating to the acid "shock" procedure. Further methodical investigations with many surface-active agents revealed that a less well-known class of substances had the capacity to bring about coacervation, and we immediately applied ourselves to the study of the behavior of such coacervate systems.

The surface-active substances referred to are the reaction products of fatty acids with an excess of alkylol-amines (*5*), eg, one mol fatty acid and two mol alkylol-amine. Despite the fact that certain assumptions have been made in the litera-

*Presented at a Symposium of Industrial Chemistry held at Linz on September 16, 1960.

ture, we do not consider that the chemical constitution of these compounds has been elucidated. Although these substances are readily soluble in water or are readily dispersible, they form an aqueous two-phase system under certain conditions due to coacervation.

When a substance of this type is dissolved in water containing electrolyte and a certain concentration has built up, a two-phase system is formed between the concentrated coacervate and the dilute equilibrium liquid. The solution separates into upper and lower layers according to their specific gravity. When further addition of the substance is made, the dilute phase disappears completely and a homogeneous solution is created. It is characteristic of the formation of a two-phase system by coacervation that, when the concentration at which the formation of the second phase takes place has been reached, the second phase immediately forms a relatively large proportion of the total volume. It could be said that the coacervate phase is a highly dilute and isotropic colloidal solution which is not miscible with an excess of solvent.

The purpose of this paper is to describe how the phenomenon of coacervation can usefully be applied in textile finishing processes. As far as we can ascertain, this is something quite new in the field of textile finishing, and patents have therefore been applied for.

DISCUSSION

The fatty acid derivative which has given the best results in our investigations to date has been given the name Cibaphasol C, and, for simplicity's sake, this name will be used henceforth.

In the preparation of the padding liquor it has been found that, as a rule, 40 g/l Cibaphasol C is required to produce the desired "aqueous two-phase system", and the presence of dyestuffs and thickening agent favor the formation of the coacervate. When this concentration is used, the preparation consists roughly of 50% coacervate and 50% equilibrium liquid. Thus, if not otherwise indicated, we have always worked with a 4% Cibaphasol C preparation. Given a medium liquor pick-up of 70%, this concentration means that only 2.8% of Cibaphasol C owf is used, which cannot by any means be considered an excessive amount.

The distrubution ratio of the two phases is greatly influenced by the electrolyte content of the system. This is demonstrated in Fig 2 by

deutsch: KOAZERVATION
francais: COACERVATION
english: COACERVATION

ACERVUS (lat) **Haufe amas, tas heap**

H G Bungenberg de Yong (Leiden), H R Kruyt (Utrecht), 1929

Abb/Fig 1

measuring cylinders containing a 4% preparation of Cibaphasol C and 0, 0.5, 1.0, 2.0, and 5.0 g/l sodium sulfate calc respectively. The coacervate was very slightly colored to make it more visible.

The density of the coacervate (which contains the larger quantity of Cibaphasol C) is less than 1 and it thus floats to the surface—even when only a small amount of dye is used, as for example in Fig 3 on the left.

The glass on the extreme right contains a fairly large quantity of dye —the coacervate is heavier. In the middle, however, it can be seen that changes in temperature can cause migration either upwards or downwards if the correct amount of dye is used, since the respective specific gravities are virtually the same.

Fig 4 clearly shows the division of the zones.

Separation of the emulsion into the two phases takes place relatively quickly, in fact too quickly for practical use in a padding liquor. It is therefore necessary to add a thickening agent to homogenize the two-phase system. Sodium alginate in amounts between 50-300 g of a 2.5% solution per liter of padding liquor has proved specially suitable for the purpose. Since the alginates are electrolytes, they have a considerable influence on the coacervation itself.

The most outstanding property of the two-phase system is the fact that the coacervate has an extremely high dissolving power on dyestuffs. Figs 3 and 4 have already shown us that the dye is dissolved exclusively in the phase containing a large quantity of the axuiliary. The dissolving power of this phase is much higher than that of the water and attracts all dye away from the equilibrium liquid: this is a most surprising phenomenon which is exceedingly difficult to explain. Even water-insoluble pigments are "swallowed up" by this phase. Figures 5-13 show how this phenomenon functions with different dyestuffs.

Fig 5 shows that 10 g/l CI Acid Red 85 is not sufficiently soluble in cold water and crystallizes out.

Fig 6 shows 10 g/l CI Acid Red 85 in a 4% Cibaphasol C preparation. The dye is completely dissolved and has migrated into the phase containing the auxiliary.

Figures 7-13 show solutions of various dyes in a 4% Cibaphasol C preparation.

Fig 7 shows 10 g/l CI Acid Brown 19 high conc as an example of a 1:2 metal-complex dye free from sulfo groups.

Fig 8 shows 30 g/l Cibacron Blue 3G, a triazine reactive dye with a large number of sulfo groups. It is very hydrophilic and the equilibrium liquid is also slightly colored.

Fig 9 shows 30 g/l CI Mordant Black 11 double conc. A few particles of undissolved dye are to be observed in the cold solution due to the large amount required for use as a black. However, they go into solution when heat is applied.

Fig 10 shows a mixture of 20 g/l Cibalan Brilliant Scarlet RL conc and 10 g/l copper phthalocyanine tetrasulfonic acid. This example shows how the more hydrophobic red monosulfonic acid migrates completely into the coacervate, whereas the blue, hydrophilic tetrasulfonic acid remains in the equilibrium liquid. For application purposes it is essential that at least the main proportion of dye, if not the whole amount, should remain in the coacervate. Dyes which are troublesome because of their hydrophilic properties can be forced into the "oil" phase by the careful addition of sodium sulfate calc and/or acetic acid. For simplicity's sake, the terms "oil" phase and "aqueous" phase will be used in the following to denote the coacervate and equilibrium liquid respectively.

In Fig 11, 10 g/l Deorlene Brilliant Red 4G demonstrates the fact that basic dyes as well as anionic dyes migrate into the "oil" phase.

In Fig 12, 5 g/l Cibanone Brilliant Green BF shows how pigments, too, migrate completely into the "oil" phase. Coupled with the exceptional wetting power of the two-phase system, this may well lead to most unexpected effects; work is already in progress on this. If vat pigments are used and caustic soda and hydrosulfite are added to the system, the leuco compound also remains in the "oil" phase.

In Fig 13, 10 g/l CI Disperse Blue 3 shows that this disperse dye is also entirely encapsuled in the "oil" phase. It can also be observed that this phase has a distinct blue tinge. This coloration could very well be the cause of a slight carrier action in the case of polyester fibers. This will be

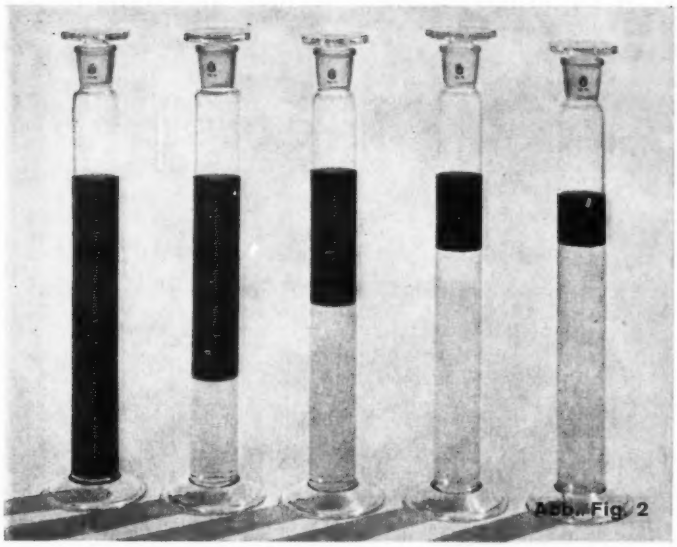
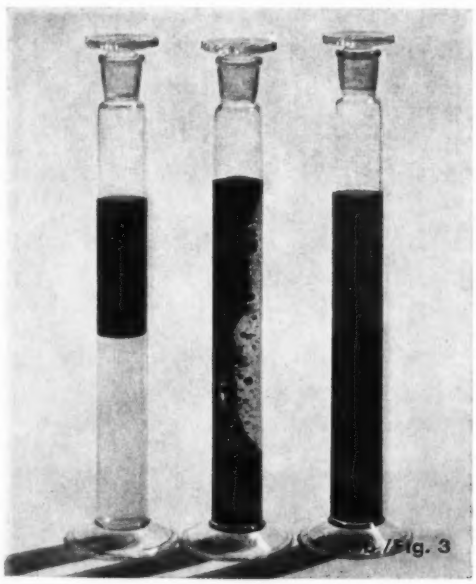


Abb. Fig. 2



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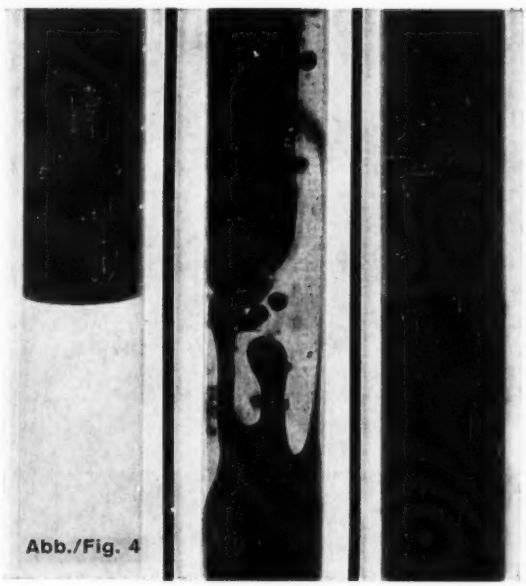

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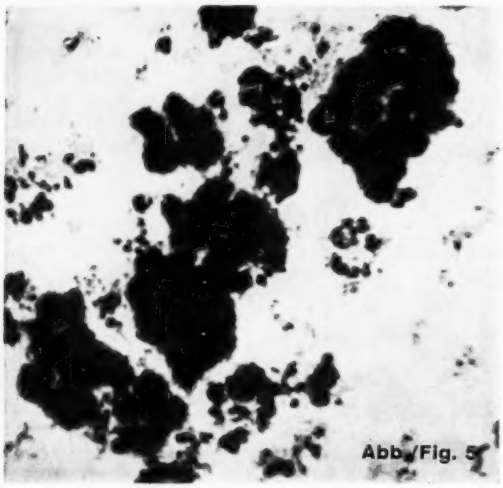

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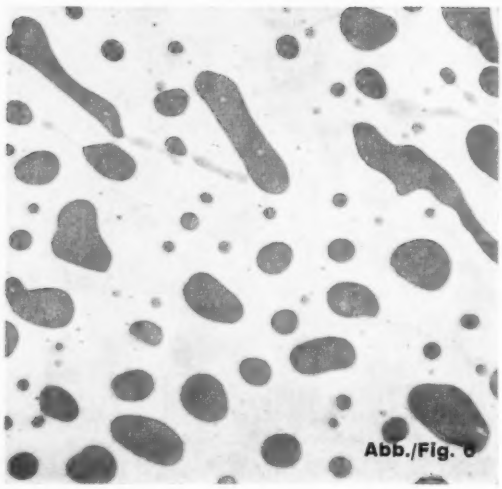

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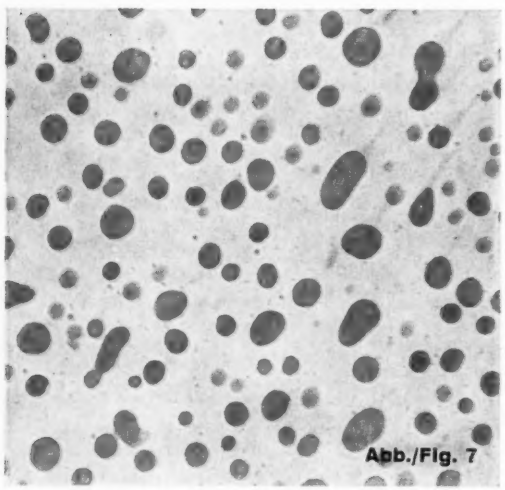

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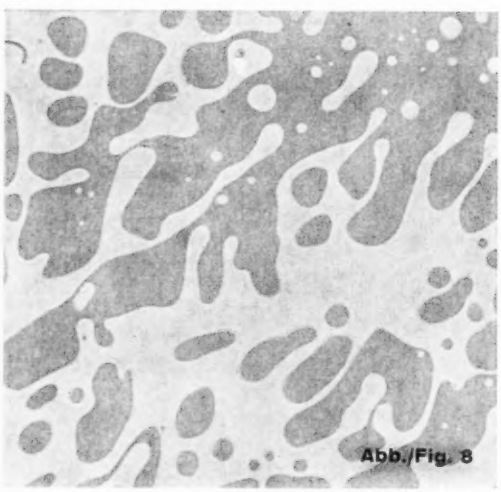

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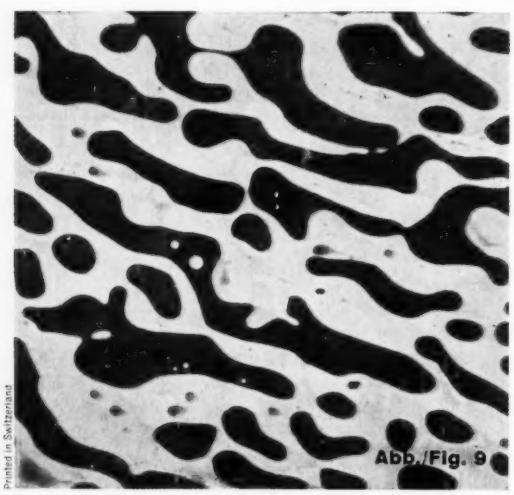

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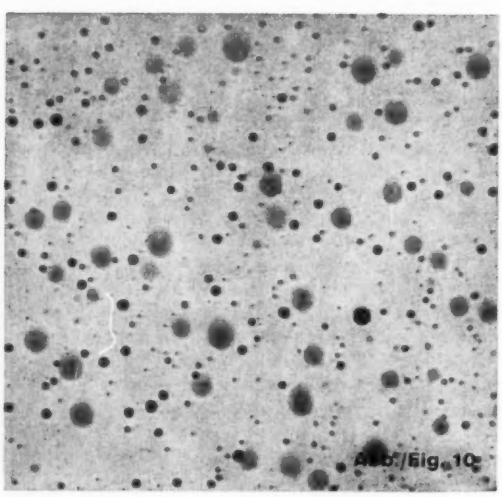

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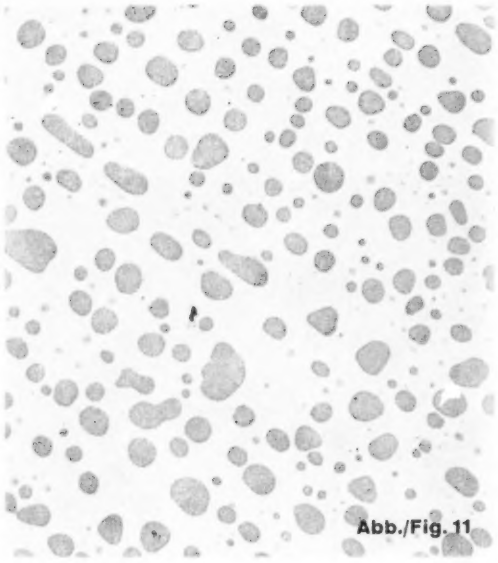

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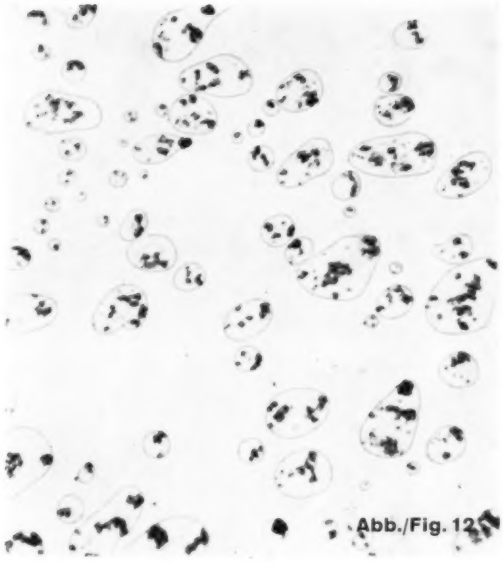

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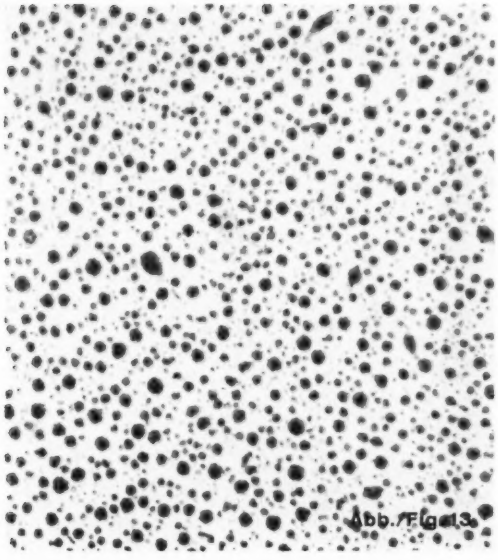

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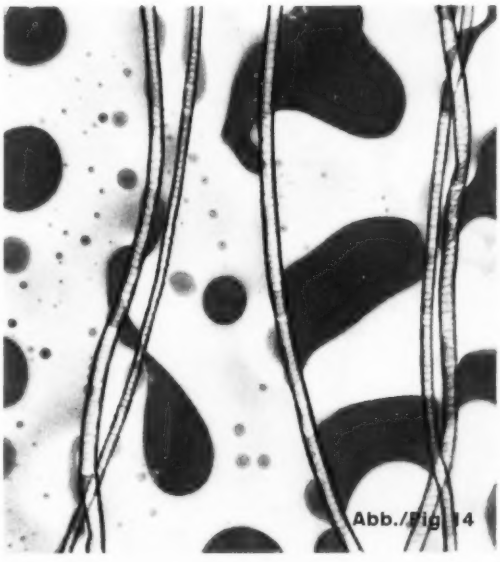

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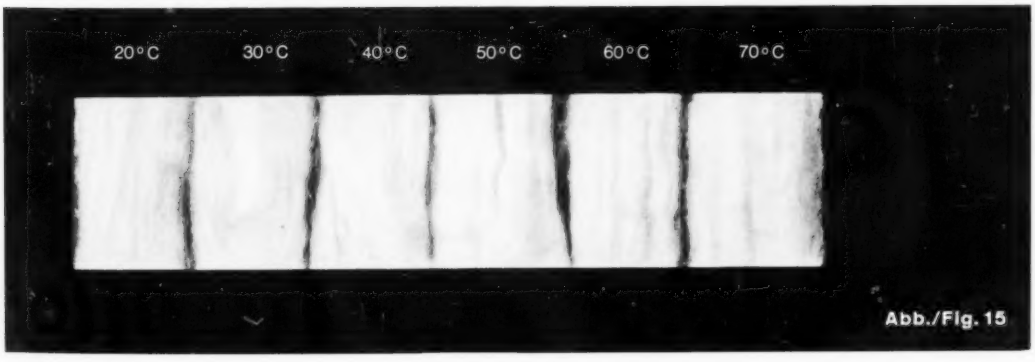

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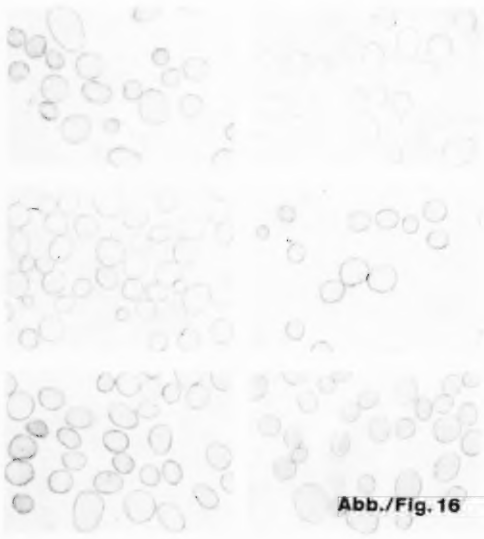

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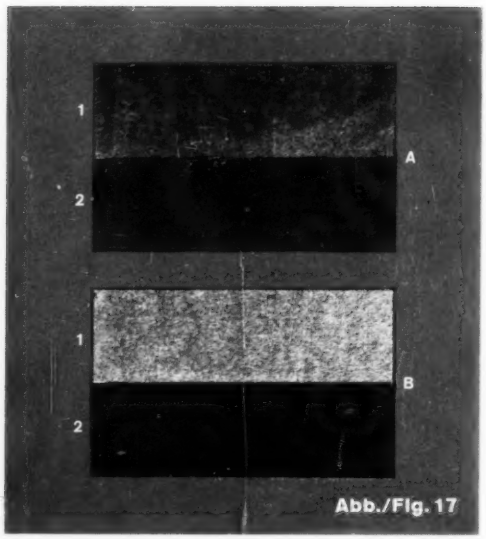

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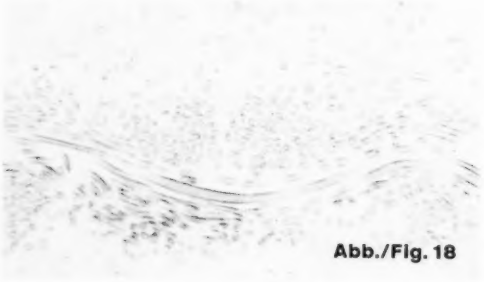

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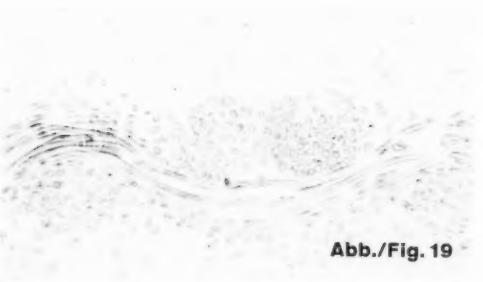

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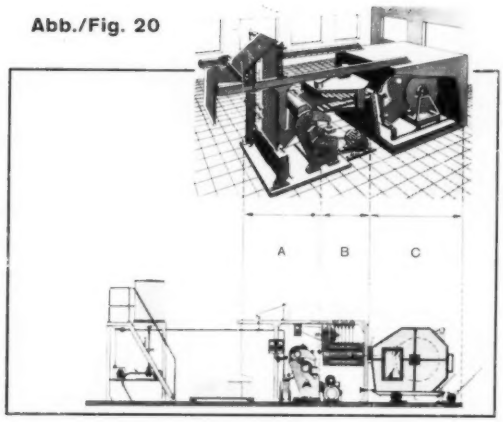

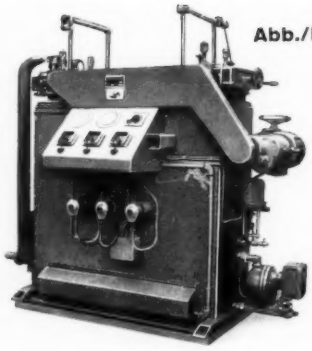

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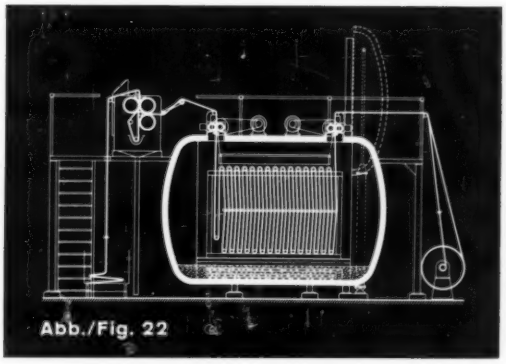

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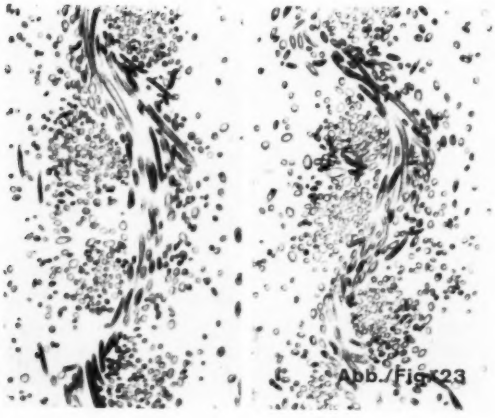

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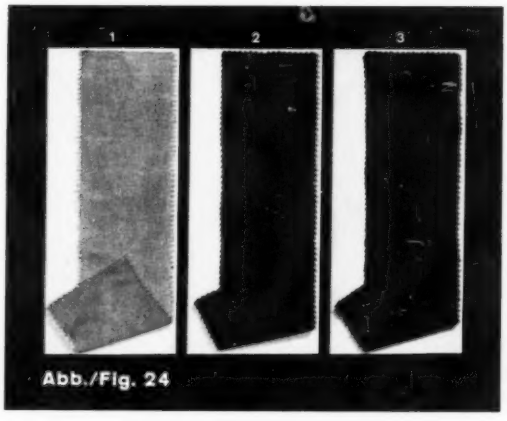

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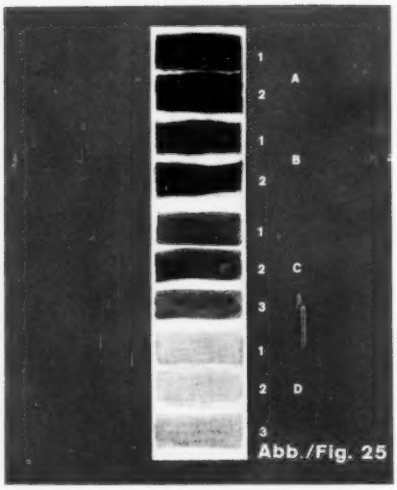

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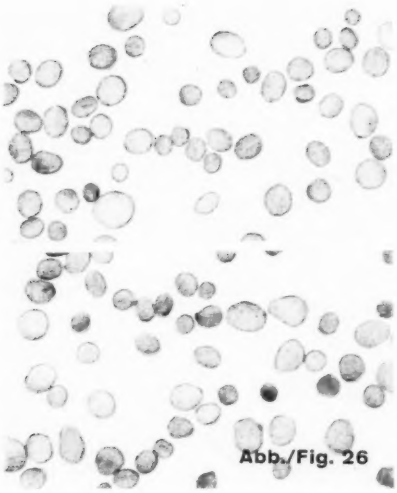
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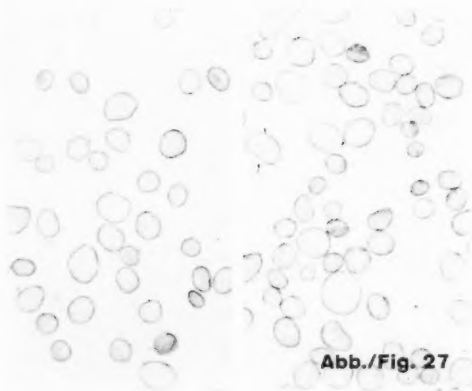
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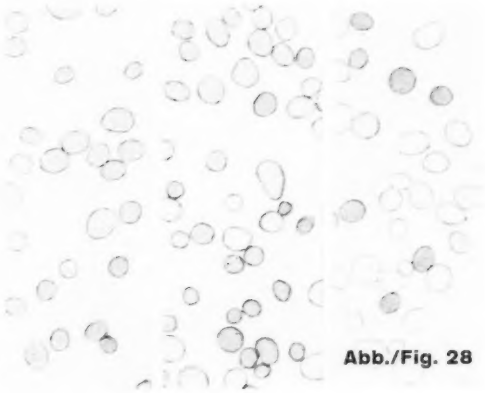


Abb./Fig. 28

Abb./Fig. 29

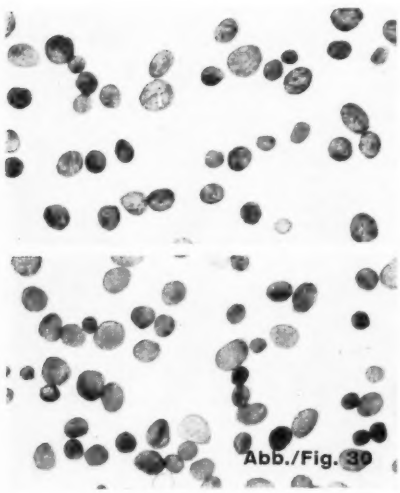


Abb./Fig. 30

discussed later. The same applied to secondary acetate in the cold pad-batch method of dyeing.

The impregnation of textiles with a coacervate system of this type (eg, on a padding mangle) opens up possibilities for entirely novel methods of application. Taking wool as an example, we shall show how all shades, from the palest hues to the deepest black, can be dyed continuously with the usual types of dye. Fluorescent brighteners, mothproofing agents and other wool-finishing products can be applied in the same manner. The method will, of course, have to be adapted to suit the form in which the wool is to be processed or the type of fiber mixture. In principle, however, the procedure comprises three steps, viz—

1) Even impregnation of the goods with the two-phase system, preferably on a padding mangle.
2) Steaming of the impregnated material, which causes the dye to migrate into the interior of the fiber. The steaming time has to be adapted to the rate of migration of the dye.
3) Removal of unfixed dye, Cibaphasol C and thickening by a thorough wash off.

These three steps will now be described in detail.

1) PADDING———The padding liquor is extremely simple to prepare, the procedure being as follows:

Pour the Cibaphasol C (sufficient for a 4-5% padding solution) on to the requisite amount of dye, paste by stirring, add hot water—cold water will also do in many cases—and then add the thickening. The amount of thickening required depends on the type of padding mangle used and the depth of shade to be dyed, it being advisable not to have the liquor too thin. The amount generally used per liter of padding liquor is 50-300 g of a stock solution of 25 g sodium alginate in one liter of water (sodium alginate 25:1000). According to our experience, other thickenings are less suitable, or even unusable.

It is advisable to use a stirrer when preparing a large quantity of padding liquor. A correctly prepared padding liquor should show evidence of a two-phase system, either when viewed under a microscope, through a magnifying glass or simply when a drop is run onto a sheet of glass (cf Figs 6 to 13). There should be hardly any coloration of the "aqueous" phase. If these two conditions are not fulfilled, correction can be made by taking one or both of the following measures:

Add 0.5-5 g/l sodium sulfate calc or common salt, or slowly add dilute acetic acid in small portions, using a stirrer. In general, other additions such as organic solvents, wetting agents, Neovadine AN, etc, should not be made. A sequestering agent should be used if soft water is not available.

The Cibaphasol C liquor possesses exceptionally high wetting power. In our laboratory tests, it was found that, in all cases, even impregnation was achieved by the short dip that the goods have on a troughless padding mangle, the liquor being carried by the two horizontally arranged bowls. Naturally, any arrangement of bowls can be used. The high wetting power remains even when viscous liquids containing a high proportion of alginate are used.

It is extremely interesting to observe under the microscope how the "oil" phase literally ignores the wool fiber and moves past it without giving up dyestuff.

Fig 14 demonstrates this very clearly. It shows a padding liquor consisting of 15 g/l CI Acid Red 85 conc and a number of wool fibers.

It is now easily understandable why the "aqueous" phase is absorbed into the interior of the fiber and that the "oil" phase has to form an almost homogeneous film over the fiber surface after the goods have been given the short dip and have passed through the nip. Photomicrographs of fiber cross-sections verify this hypothesis. The formation of the film prevents the "sandwich effect" occurring, prevents skitteriness when working with all dyestuff groups, and permits completely satisfactory steam fixation.

This is the essential feature of the Cibaphasol Process.

Another important factor is that the coacervate containing the dye does not exhibit any affinity for the wool fiber at high temperatures—at least not immediately after padding. The "oil" phase can be completely removed from the fiber by a simple rinse in water; this ensures dyeing completely free from "tailing".

Slubbing was padded through a liquor made up as follows:

30 g	CI Acid Black 60 double conc
40 g	Cibaphasol C
630 g	water
300 g	alginate thickening 25/1000
1000 g	

The padding temperatures were 20, 30, 40, 50, 60 and 70°C. (See Fig 15). Finally, the goods were immediately rinsed in lukewarm water—the color was removed. The sample at the extreme right is a Cibaphasol dyeing which has been steamed and finished off in the normal manner.

The construction of the impregnating plant or padding mangles for bulk processing will not be discussed here. In any case it appears to us that when padding wool, two soft rubber bowls of the same degree of hardness should be used. We work mainly with bowls of 50 Shores.

2) STEAMING———Steaming, in saturated steam, the second main step in the process, is carried out immediately after impregnation; in this operation, the dye penetrates into the interior of the fiber. As we have already seen, the film of coacervate can easily be washed off. The dye does not migrate through the epicuticle and surface scales into the cortex until damp heat is applied. The process is very well exemplified by a series of photomicrographs.

In Fig 16, slubbing and CI Acid Red 209 were used. The top, left shows a normal 3% dyeing. Top, right shows an unsteamed Cibaphasol impregnation with the same amount of dye, and in this case the coating of dye naturally cannot be seen in cross-section. Various steaming times of 2.5 minutes (center, left), 10 minutes (center, right), 20 minutes (bottom, left) and 80 minutes (bottom, right) show how migration of the dye progresses. Maximum penetration is achieved between 10-20 minutes, and there is no difference between the Cibaphasol dyeing and a conventional one. In the same manner, the dye concentration which builds up in the washing-off liquor when the steamed (10-20 min) slubbing is washed is not noticeably diminished by prolonging the steaming time. The optimum steaming time is determined by the temperature of the saturated steam and the rate at which the heat is transferred into the interior of the goods.

A good method of establishing the optimum steaming time is to compare the degree of coloration of washing-off liquors. The procedure is to impregnate a number of pieces of wool of the same size with a dyestuff-Cibaphasol preparation, steam them for various periods and then wash off in baths of exactly the same volume. It can soon be ascertained from what steaming time on roughly the same amount of unfixed dye is removed.

An apparatus would have to be constructed in which slubbing could be steamed continuously for 15 minutes. Designs for such machines were worked out quite independently by

the Italian firm ILMA of Schio and were displayed at the Milan Machinery Fair in 1959.

We carried out tests with slubbing on a Monforts steamer at temperatures up to 150°C, and, although the results have not yet been fully assessed, they appear promising.

In the laboratory we used a steamer in which samples of slubbing or cloth can be suspended freely in a saturated steam atmosphere.

Good results were also achieved on a vigoureux printing machine by replacing the vigoureux roller with a smooth roller. The dyes used in the Cibaphasol process were Cibalans in shades from fawn to black, and also Cibacrons in very deep and brilliant reds. The important factor is that the impregnated damp slubbing is transferred to a steamer as quickly as possible and treated in damp steam; good dyeings are obtained by this procedure.

Fig 17 shows pad dyeings produced with 30 g/l CI Acid Black 60 on a light weight cloth. The dyeings numbered 1 were not produced with Cibaphasol C and show pronounced "sandwich effects". The dyeings numbered 2 were padded with the same amount of dye but in a 4% Cibaphasol preparation. A1 and A2 were steamed for 10 minutes. B1 and B2, on the other hand, were batched after padding, wrapped in rubber sheeting, and stored for 10 hours at 60°C. Both the dyeing which was steamed (A2) and the 60°C dyeing (B2) exhibit the shade and fastness properties of a normal dyeing. This may well be considered as something quite novel, and this "warm pad-batch" procedure is certainly worth further investigation—not only for piece goods but also for raw stock.

Fig 18 demonstrates the very slight coloration of the surface fibers and the "sandwich effect" (top) and, in contrast to these, the good penetration of Cibaphasol dyeings (bottom) —first, the dyeings which were steamed for 10 min and then, in Fig 19, the dyeings produced at 60°C by the warm pad-batch method.

A machine which appears to us to be particularly suitable for this process is the Pad-Roll* unit, a schematic diagram of which is shown in Fig 20.

We already dyed several hundred yards of materials of various qualities with great success in a unit of this type, and samples are available for inspection.

The steaming time can naturally be shortened if high steaming temperatures are utilized. It goes without saying that saturated steam should always be used.

Fig 21 shows a continuous ribbon steamer designed by Konrad Peter AG in Liestal, Switzerland, which provides for a two-minute treatment in saturated steam at 120°C.

Fig 22 shows a diagram of the unit. We would also add that the James Hunter Machine Co, North Adams, Mass, also manufactures a similar machine with a double water seal.

We dyed four different qualities of wool cloth in three different shades on the "Peter" machine, viz, a) a Cibalan mixture, b) a red with CI Acid Red 85, and c) a black with Cibalan Black BGL. The first results were astonishingly good, even though the steaming time was too short—the washing-off liquors were heavily colored.

In spite of this, it can be seen from Fig 23 that the Cibaphasol dyeing (left), which was steamed for two minutes, is just as well penetrated as a dyeing produced by the conventional method (right).

Other tests in the laboratory steamer were carried out with gabardine ski-trousering made of a mixture of crimped nylon 6,6 and wool.

Fig 24 shows how three qualities of this material have been dyed solid with CI Orange 74 (left), with CI Acid Blue 129 (center), and with Cibalan dyes (right). A bulk trial carried out with Cibalan Black BGL and various Cibalan combinations on a Pad-Roll machine produced excellent gabardine trouserings.

The basis of the Cibaphasol process is the diffusion of the wet surface film in wet saturated steam, which brings about even dyeing of the fiber into the cortex. In some cases, however, this procedure can give rise to certain difficulties if the goods have to be dried after padding. If the goods do have to be dried, the operation should be carried out as evenly as possible, for example on a nozzle-type dryer; the dried film gives a homogeneous dispersion of the dye over the surface of the fiber. However, if this procedure is adopted, the goods have to be given a hot acid "shock" treatment in order to bring about fixation, the dye and Cibaphasol C being deposited evenly and almost quantitatively on the fiber surface. It should be noted, however, that the fiber is dyed at the surface only; the yield is low and the wetfastness properties are not quite up to standard, but may well suffice in pale shades in some cases. Similar conditions obtain when the steaming time is not long enough to allow the total amount of dye to penetrate into the interior of the fiber. An acid "shock" treatment is necessary in this case, too, in order to prevent too much color from being removed during washing off.

3) WASHING-OFF ——— In the third and last step of the process, unfixed dye, thickening and the Cibaphasol C have to be washed off. If the goods have been adequately steamed —which, for example, is always possible on a Pad-Roll unit—a thorough rinse is all that is necessary, the Cibaphasol C itself acting as a powerful detergent. The detergent action can be intensified—for example, in an open-width washer—by adding an additional 1-2 g/l Cibaphasol C. However, soft water should be used or, if this is not available, a sequestering agent added. It is only natural that these washing-off liquors will be more deeply colored than those of a conventional dyeing. The pH of a washing liquor is between 8 and 9.

The temperature of the washing-off bath should be adjusted to suit the fastness properties of the dyes used, and should naturally be as high as possible.

The rinsing baths which follow should be adapted to the working conditions which prevail. We recommend an acid rinse as the last wet treatment. It goes without saying that, when working continuously, the washing liquors should be replenished continuously and that a continuous chemical feed should also be provided.

As has already been pointed out, an acid "shock" treatment should be applied if the goods were not steamed long enough, or if they had to be dried after padding. For this purpose, the bath may be set with 2-4 cc/l formic acid 85% and 4 cc/l Neolan Salt P. The goods are treated at open width for 30 sec at 90-95°C. Neolan Salt P in an acid bath acts as a powerful detergent. Only a small amount of dye bleeds into the acid bath so that even when working continuously no insurmountable complications should arise because of "tailing".

So much for the process itself. We shall now go on to discuss the groups of dyes which can be applied by it. According to our experience, nearly all water-soluble wool dyes are suitable for the Cibaphasol process, except perhaps some dyes of particularly large molecular size as, for example, highly sulfonated copper phthalocyanines or some 1:1 metal complexes. (Cf the figures pertaining to the two-phase system). The question immediately arises, and a

*Rydboholm system

very important one, too, as to how dyes behave which require special measures to bring about leveling, examples being the 1:1 metal-complex dyes which have to be boiled for two hours at pH 2 to overcome skitteriness, or the Cibacron dyes which have to be applied in the presence of an auxiliary—as in the Neovadine process— to produce level and productive dyeings on wool. The tests we carried out, however, yielded the most surprising results. It was found that, when these dyes are applied by the Cibaphasol process, the results obtained correspond to those produced by the special methods prescribed for them, at least on slubbing.

Fig 25 shows dyeings on wool slubbing produced by both the conventional method and the Cibaphasol method.

A1—CI Mordant Black 11, Cibaphasol dyeing
A2—CI Mordant Black 11, normal dyeing
B1—CI Acid Black 60, Cibaphasol dyeing
B2—CI Acid Black 60, normal dyeing
C1—Cibacron Blue 3G, Cibaphasol dyeing without Neovadine
C2—Cibacron Blue 3G, normal dyeing with Neovadine
C3—Cibacron Blue 3G, "normal" dyeing without Neovadine
D1—CI Acid Orange 74, Cibaphasol dyeing
D2—CI Acid Orange 74, normal dyeing at pH 2
D3—CI Acid Orange 74, "normal" dyeing with formic acid

In the case of CI Mordant Black 11 (unchromed) and CI Acid Black 60, there is no difference to be observed. It should be pointed out that the same amounts of dye were applied to the substrate in both processes. Particularly interesting are dyeings produced with Cibacron Blue 3G. It can be seen that dyeing C1 produced by the Cibaphasol technique (naturally without Neovadine AN) corresponds exactly to dyeing C2 produced by the standard Neovadine procedure, but is quite different from a "normal" dyeing dyed without Neovadine AN (C3). Similar results are to be observed in the case of CI Acid Orange 74: the Cibaphasol dyeing (D1) corresponds to normal dyeing (D2), which was produced at pH 2. The skittery "normal" dyeing (D3) was produced with formic acid.

The photomicrographs shown in Figures 26-29, which show cross sections of the dyeings in Fig 25, give a better idea of this unusual phenomenon, and it can be seen that the single fibers are just as well penetrated in the Cibaphasol process as in the conventional procedure, and, of course, much better than in the incorrect "normal" procedure. All dyeings were produced with the same amount of dye.

The top of Fig 26 is dyeing A1 in Fig 25; the bottom, dyeing A2. The left side of Fig 27 is dyeing B1 in Fig 25; the right side, dyeing B2. The left side of Fig 28 is dyeing C1 in Fig 25; the center, dyeing C2; and the right side, dyeing C3. The top of Fig 29 is dyeing D1 in Fig 25; center, dyeing D2; and bottom, dyeing D3.

These pictures give ample confirmation of the "coating" hypothesis. Only a homogeneous coating could be the explanation for the amazing degree of fiber levelness produced by a Cibaphasol dyeing. It is quite immaterial whether it is an acid (metallized) dye without sulfuric acid or a Cibacron dye without Neovadine AN. At the same time it can be seen that dyes of quite different groups are miscible with one another, which previously was not possible. It is therefore quite possible to mix, for example, an acid yellow, a Cibacron scarlet and a neutral (metallized) grey. Moreover, the amount of dye used is exactly the same as in the traditional dyeing procedures; all that is necessary is to convert the percentages into the quantities required for padding. The degree of similarity of the shades is quite amazing. And now a few words on the afterchrome dyes, particularly the chrome blacks —an extremely important group. In many discussions with wool dyers, we have been told repeatedly that a continuous dyeing procedure, particularly for slubbing, would only be of real interest if it would also permit the continuous application of chrome black.

The dyeings shown in Figures 24 and 25 have shown that there is no difficulty in fixing important dyes such as Triochrome Black T and CI Mordant Black 11—provisionally as an acid unchromed dye—in the deepest shades by the Cibaphasol process. Chroming can also be carried out continuously by repeating the whole process: the unmetallized dye is fully prefixed in the Cibaphasol process by adequate steaming. Subsequent to this, the wool is run through a fresh, warm padding liquor containing simply thickening and an alkali chromate, steamed for 10-20 minutes and then washed off. Fig 30 shows an 8% CI Mordant Black 11 dyeing on slubbing; at the top, a Cibaphasol C dyeing chromed by steaming; at the bottom a conventional after-chromed dyeing. Shade and fastness properties are the same as far as we have been able to test to date. Black dyeings produced in this manner show no sign of the objectionable "yellow bleeding" when subjected to alkaline treatments. We would emphasize, however, that up to now we have not had the opportunity of trying out the process with other chrome dyes. It would have to be worked out whether the double treatment (dyeing and chroming) would be more economical than the application of Cibalan or other premetallized dyes in one operation.

We have already pointed out that the pH of a 4% Cibaphasol preparation is 9. After padding, the goods are steamed in a Pad-Roll unit for several hours, and, in a continuous pressure steamer, at 120°C, or even at 150°C. It is, of course, extremely important to know how the wool is affected by such treatments. To this end we have determined the cystine and cysteine values of undyed wool, conventionally-dyed wool and Cibaphasol-dyed wool. Table I conveys the surprising and most gratifying fact that, in all cases, the cystine content of wool dyed by the normal ammonium sulfate method was reduced to a greater extent, even compared with a treatment for several hours in a Pad-Roll unit. In not one single instance did we obtain really unsatisfactory values.

The results surpassed our greatest expectations.

We also tested the wet tenacity of various fabrics Table II. The same picture is presented as in the case of the cystine values—at least as far as the warp is concerned.

The filling values for the wool dyed in the freely floating state are without significance, since the apparent improvement can only be a felting effect.

The same is to be observed when determining the tensile strength of the single fibers (Table III).

Further, the titration curve for a 4% Cibaphasol preparation (Fig 31) shows that only a small amount of sulfuric acid is required to produce a pH of 7 or 5.

It was established, for example, that, at a liquor pick-up of 70%, just under 0.4% sulfuric acid owf was required to adjust the pH of the liquor taken up by the wool to 5. This indicates that this mild organic base is by no means alkaline enough to bring about any degradation of the wool fiber serious enough to be of technical importance, even after it has acted on the wool for a number of hours.

The change in direction of the ti-

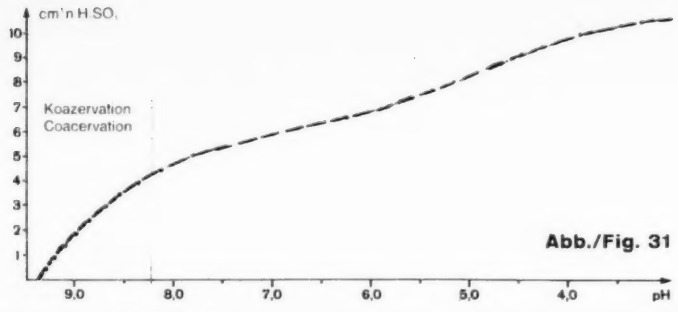


Abb./Fig. 31

TABLE I

Determination of cystine and cysteine content according to Zahn and Traumann (*Textilber 35*, 1069 (1954)

	Cystine %	*Cysteine %*
Slubbing Austral 60's		
Undyed	11.5	0.2
Cibaphasol dyeing, 10 min in sat steam	10.7	0.3
Cibaphasol dyeing, one min 40 sec, 150°C (Monforts Reactor)	11.3	0.3
Normal Cibalan dyeing, ammonium sulfate	10.5	0.2
Normal Neolan dyeing (pH 2)	11.3	0.2
Normal Alizarine Fast Blue dyeing (pH 4-5)	11.4	0.2
Gabardine		
Undyed	11.1	0.2
Cibaphasol dyeing, Pad-Roll, four hours, 100°C	10.7	0.3
Cibaphasol dyeing, pressure steamer, two min, 120°C	10.6	0.5
Normal Cibalan dyeing, ammonium sulfate	10.4	0.3
Cheviot Piece		
Undyed	9.9	0.2
Cibaphasol dyeing, Pad-Roll, four hours, 100°C	9.8	0.2
Cibaphasol dyeing, pressure steamer, two min. 120°C	9.5	0.4
Normal Cibalan dyeing, ammonium sulfate	9.5	0.2
Serge		
Undyed	11.3	0.2
Cibaphasol dyeing, Pad-Roll, four hours, 100°C	10.6	0.2
Cibaphasol dyeing, pressure steamer, two min, 120°C	10.7	0.4
Normal Cibalan dying, ammonuim sulfate	10.5	0.3
Dress Material I		
Undyed	11.0	0.2
Cibaphasol dyeing, Pad-Roll, four hours, 100°C	10.6	0.3
Normal Cibalan dyeing, ammonium sulfate	10.3	0.3
Dress Material II		
Undyed	11.1	0.2
Cibaphasol dyeing, Pad-Roll, four hours, 100°C	11.1	0.2
Cibaphasol dyeing, one min 40 sec, 140°C (Monforts Reactor)	10.0	0.3
Normal Cibalan dyeing, ammonium sulfate	10.3	0.3
10 min sat steam without Cibaphasol C	10.9	0.3
10 min sat steam with Cibaphasol C	10.7	0.3
10 hr at 60°C without Cibaphasol C	11.0	0.3
10 hr at 60°C with Cibaphasol C	10.4	0.4

TABLE II

Wet tenacity of four wool fabrics

Instron testing apparatus
Rate of tear, 20 cm/min
Length between holders, five cm; width of test sample, approx 2.5 cm (same number of threads per inch)
Number of single tests: 6.

	No. of threads per inch	*Undyed* kg	V%	*Cibaphasol dyeing Laboratory Pad-Roll unit Four hr at approx 100°C* kg	V%	*Change in %*	*Normal Cibalan dyeing 5% ammonium acetate Two hr at boil* kg	V%	*Change in %*
Warp									
Gabardine	111	23.4	5.0	22.6	4.3	−3	22.6	8.8	−12
Cheviot	50	12.1	1.8	11.3	4.6	−7	9.8	2.5	−19
Dress material I	57	10.1	8.1	9.8	4.7	−3	8.8	9.3	−13
Dress material II	55	8.9	2.2	8.9	11.1	0	8.0	3.0	−10
Filling									
Gabardine	60	15.0	5.2	14.1	5.9	−6	11.8	3.8	−21
Cheviot	45	6.7	5.0	6.4	3.3	−5	7.7	3.5	+15*
Dress material I	50	7.2	2.8	6.6	6.2	−8	7.9	9.7	+10*
Dress material II	50	6.5	5.6	6.5	6.6	0	7.1	6.2	+10*

*These values indicate that felting took place in the open dyebath, as opposed to the firmly held fabric in the Pad-Roll process.

TABLE III

Tensile strength of single fibers—dry

Slubbing Austral 60's
120 single tests

	Grams	*V in %*
Undyed	2.690	42.6
Cibaphasol dyeing (10 min sat steam)	2.614	41.3
Normal Cibalan dyeing (ammonium sulfate)	2.705	37.6

tration curve at about pH 8.25 is in accord with the fact that the coacervate only attains this value under our titration conditions. It should be noted that the dependence of the coacervate on pH is markedly influenced by various factors, eg, the electrolyte content. If the pH drops too much, the system loses its properties, and it decomposes at low pH's.

There still remains a tremendous amount to be discussed on the use of this novel two-phase system on other fibers and along with other auxiliaries and dyes. For example, it is possible to produce fast dyeings on skins—eg, chrome-tanned sheepskins—with neutral (metallized) dyes, making use of the warm pad-batch process at 60°C.

The dyeing of wool/polyamide blends is illustrated in Fig 24. There is also no difficulty in dyeing wool/cellulosic unions, particularly when cotton dyes are used which reserve the wool. The Cibaphasol process should also be of considerable interest in carpet dyeing, particularly in the production of cheap carpets for automobiles.

It was mentioned at the beginning that pigments are also retained by the coacervate. However, we shall not discuss in this paper the possibilities which the exceptionally high wetting power of the Cibaphasol system has to offer in vat dyeing—whether in pigmenting or in application of the reduced dye.

We have already seen (Fig 13) that disperse dyes also enter the "oil" phase. What impressed us particularly was the fact that bulk Pad-Roll trials with wool/polyester styles were extremely successful—the disperse and Cibalan dyes were together in the coacervate. The unfixed disperse dye was removed by an intense hot treatment after the cloth had been in the Pad-Roll chamber for six hours. The result was a perfectly satisfactory dyeing, and this on material which had caused the finisher considerable trouble.

Our bulk experience with the new process is limited at the moment to a single dyeing of 400 yards in a medium-depth blue.

CONCLUSION

We could go into much more detail on the work we have carried out, but that is not the purpose of this paper; it is intended merely as an introduction to the process. We have now reached a stage where we feel we are obliged to publish the results we have achieved. However, we do not want to create the impression that we are already in a position to give

detailed working formulas for each and every problem. Engineers, as well as dyers, will be interested in the process because new types of machine will have to be constructed in many cases. The fact that certain types of machine have been mentioned in this paper should not be construed as preference for one particular company. They were used simply because they appeared to be the most suitabl machines for our experiments and because they happened to be available.

We have, for example, started trials with yarn on a machine similar to the old type of liquoring machine, using a tunnel rod dyer for steaming, and with wound packages on a centrifugal dyeing machine.

It should be emphasized that we are prepared to cooperate with all who are interested, and it is by such cooperation that the most promising results will be achieved. We are convinced that much can be expected from the phenomenon of coacervation.

ACKNOWLEDGMENT

I should like to extend my very best thanks to my coworkers who have contributed so much to this work, namely H Abel, Dr A Berger, H Hostettler and Dr B Milicevic. The photomicrographs which so effectively demonstrate the work were made by N Bigler. My thanks also go to all others who gave their assistance.

LITERATURE CITED

(1) Royer, Zimmermann, Walter, and Robinson, *Textile Research J 18*, 598 (1948); U S Pat 2,387,200 (Walter).

(2) Casty and Kraehenbuehl, *J Soc Dyers Col 65*, 381 (1949); U S Pat 2,552,404; GP 849,094 and others (Ciba).

(3) Ris, Hirsbrunner, Schaeuble, and Soiron, *Textil-Rundschau 14*, No. 10, 571 (1959).

(4) Lecture given at the International Federation of Associations of Textile Chemists and Colorists, London, Sept 16-18, 1959.

(5) U S Pat 2,089,212 (Kritschevsky).

(6) Lemin, *J Soc Dyers Col 74*, No. 11, 746 (1958).

(7) H G Bungenberg de Jong & H R Kruyt, *Prod Akad Sci Amsterdam 32*, 849 (1929). D G Dervichian, *Research 2*, 210 (1949).

Carrier Dyeing———

(*concluded from page 104*)

Poorly emulsified carriers not only give danger of carrier spots but also cut down rate at which insoluble carrier dissolves in water. The net result is lower absorption of carrier by fiber and final result of lower dye absorption.

COST COMPARISONS — COMMERCIAL VERSUS "MILLMADE" CARRIERS———Having determined that comparable dyeings could be made whether commercial carriers or carrier chemical plus emulsifier base was used, a cost analysis (Table XI) was made on the two systems of carrier dyeing.

As indicated by Table XI, comparable dyeings at a substantial saving to the dyehouse is obtained in all cases where the "millmade" carrier was used as a replacement for the "commercial" carrier.

SUMMARY

1) The carrier action of commercial carriers in the dyeing of Dacron 54. Arnel and Kodel is described. The effect on shade depth of carrier concentration in dyebath and of carrier chemical used in the commercial carrier has been discussed.

2) The carrier chemicals used in these commercial carriers (o-phenylphenol, biphenyl, methyl salicylate, butyl benzoate, o-dichlorobenzene and trichlorobenzene) were mixed in various combinations with an emulsifier base, Emkalar Base E-55.

In another series of dyeings, the carrier action of these blends of carrier chemicals with emulsifier base was also determined.

Effect of shade depth of carrier concentration in dyebath and variation in ratio of carrier chemical to emulsifier base was observed.

3) Emphasis has been placed on the use of "millmade" carrier systems from carrier chemicals with emulsifier base when the cost factor is given consideration.

TABLE XI

Cost comparisons—commercial vs "millmade" carriers

		% Active	Lbs used	@ ¢/lb	Cost $
1)	*Methyl Salicylate Type*				
	Carrier A	40	1000	0.55	550
	Methyl salicylate	100	400	0.62(	328
	Emulsifier base	—	200	0.40(	
	Savings				222
2)	*O-Phenylphenol type*				
	Carrier E	50	1000	0.60	600
	O-Phenylphenol	100	500	0.48(	340
	Emulsifier base	—	250	0.40(	
	Savings				260
3)	*Trichlorobenzene type*				
	Carrier C	70	1000	0.42	420
	Trichlorobenzene	100	700	0.17(	189
	Emulsifier base	—	175	0.40(	
	Savings				231
4)	*Butyl benzoate type*				
	Carrier D	70	1000	0.55	550
	Butyl Benzoate	100	700	0.32(	317
	Emulsifier base	—	233	0.40(	
	Savings				223
5)	*Biphenyl type*				
	Carrier G	60	1000	0.48	480
	Biphenyl	100	600	0.20(	240
	Emulsifier base	—	300	0.40(	
	Savings				240

TRADENAMES

The following tradenames have been used throughout this article:

Arnel (triacetate fiber)—Celanese Corp of America

Dacron (polyester fiber)—E I du-Pont de Nemours & Co, Inc

Darvan (dinitrile fiber)—Celanese Corp of America

Emkalar Base E-55—proprietary product of Emkay Chemical Co

Kodel (polyester fiber)—Eastman Chemical Products, Inc

LITERATURE CITED

(1) Carmichael, D G, *Textile Age*, 32 (Dec, 1951).
(2) DuPont Conference on Dyeing & Finishing, *Tech Bull (duPont)*, 34 (Mar 16, 1956).
(3) Ivey Jr, W R, *Am Dyestuff Reptr 48*, No. 3, 94 (Feb 9, 1959).
(4) U S Pat 2,670,263
(5) Sommar, Helen G, *Am Dyestuff Reptr 47*, No. 16 553 (Aug 11, 1958).
(6) Fortess, F, *ibid 44*, 524 (Aug 1, 1955).
(7) Salvin, Victor S, *ibid 48*, No. 10, 49 (Apr 6, 1959).
(8) Piedmont Section, AATCC, ibid *48*, No. 22, 23-34 (Nov 2, 1959); No. 23, 37-45, (Nov 16, 1959).
(9) Textile World, 87 (Feb, 1955).
(10) Schuler, M J, *Textile Research J*, 352 (May, 1957).
(11) Roches and Gourmant, in manuscript.

New Products———

(*continued from page 88*)

psi compared with a 55,000 psi strength for ordinary bolts.

The company states that the new product was developed to meet requirements for a carriage bolt to stand up under high-stress conditions in such applications as textile machinery, conveyors, and other power equipment. The Premier bolts were developed to overcome the problems of head-popping, shearing and stretching.

Premier states that the strength of its carriage bolts is due to the use of quality high-carbon steel, triple heat-treated to give maximum strength, toughness and durability.

Premier carriage bolts are impregnated with Resisto-Plate, for longer-lasting resistance to rust and corrosion.

Literature available.

* * *

RED-RAY MANUFACTURING CO, INC
318 Cliff Lane
Cliffside Park, NJ

Infra-red Generators—gas fired—Type "H"

These generators are a high-radiation type and are rated at 3000 Btu per lineal inch per hour. Generators are used in drying and curing of light weight webs.

Infra-red Generators—gas fired—Type "K"

The type "K" is a high-radiation, high-capacity infra-red generator with wide angle radiation pattern. Rated at 9000 Btu per lineal inch per hour, its primary use is in high-speed drying of heavier materials.

Literature is available.

"Red-Ray" is a registered trade style

REGENT MACHINERY CORP
110 West 40th St
New York 18, NY

ILMA Continuous Tow- and Top-Dyeing Machine

This unit is manufactured by the firm ILMA in Schio, represented in this country by Regent Machinery Corp.

For the top-dyeing machine, it is said to be able to dye in continuous operation 24 slivers of wool and worsted top in either acid or chrome colors. The production capacity is reported to be 250 pounds per hour. The material passes from the creel into the continuous top-dyeing machine, after which it continually goes into a back washer and dryer, then into balling operation. This equipment is said to cut down the cost of the operation by 1/3 for labor, floor space, dyestuffs and chemicals.

Omez Open-width Forced Jet Washing Machine

Omez of Bergamo, through Regent Machinery Corp, introduced the first machine of this type at the American Textile Machinery Exhibition-International at Atlantic City in April.

This machine utilizes high-velocity jet sprays designed along Bernoulli's principle. It is said to offer the following advantages:

1) Each washer replaces three to four conventional wash boxes.
2) It utilizes three pounds of water per pound of cloth processed.
3) It requires 25% as much floor space as conventional washers.
4) It requires 0.5 pounds of steam per pound of cloth processed.

This machinery is said to be exceptionally good, when used after mercerizing, after bleaching, after printing, scouring, hot naphthol soaping, washing of surface resins from cloth that has been cured, etc.

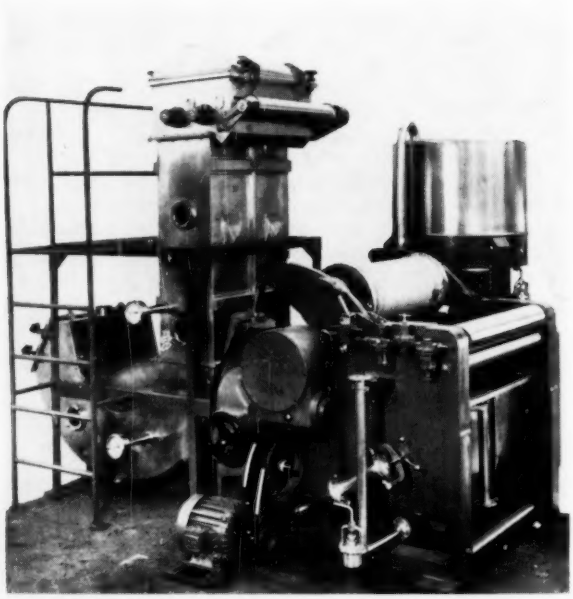
Ross stationary tank high-speed disperser

CHARLES ROSS & SON CO
148-156 Classon Ave
Brooklyn 5, NY

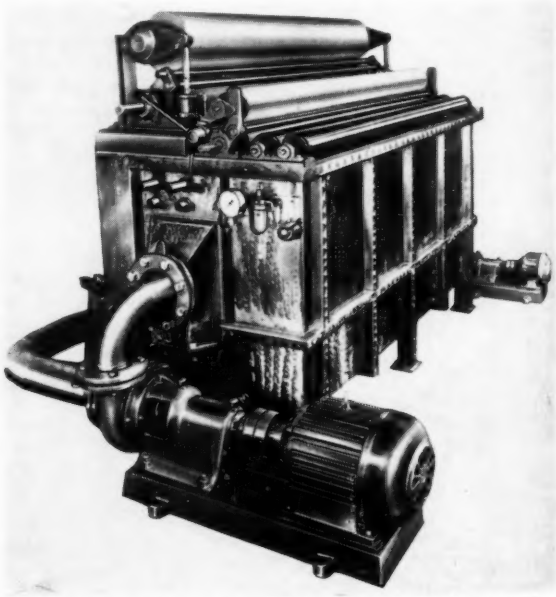
Stationary Tank-type Dispersers

New stationary tank-type dispersers have been introduced in various sizes from five-gallon to 3000-gallon size.

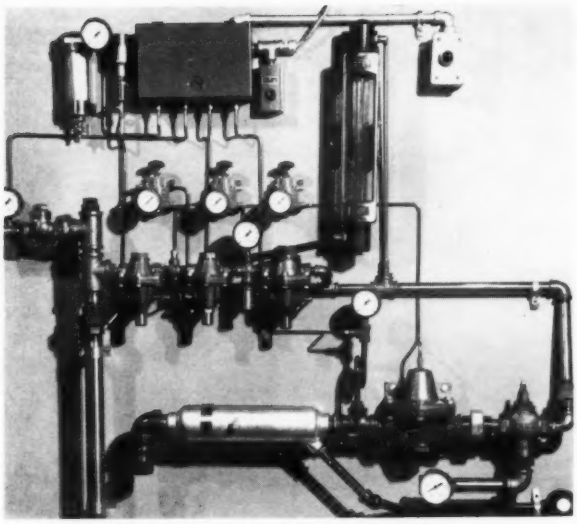
The units feature high-speed dispersion type impeller of either sawtooth-disc type as shown in the illustration or with closed design multiple action millhead for producing fine ultimate grinds or dispersions. Impeller and shaft are of stainless steel and operate at speeds up to 5000 rpm. Tremendous impact and shear are developed which is reported to result in mixing and dispersing most



Portion of ILMA continuous tow- and top-dyeing machine



Omez open-width forced jet washing machine—Model EO-2



Staley's Automatic Jet Cooking System

paste type products in considerably less time than in other type stationary-tank mixers.

Tanks are provided either plain or jacketed, with several optional-type outlet gates, and with legs to raise gate to any required height above floor. Literature available.

* * *

SMS INSTRUMENT CO
P O Box 24
Rensselaer, NY

Dies for Cutting Textile Specimens

In addition to the "NAEF" Sample Cutting Press and variety of dies, SMS Instrument Co is now stocking dies for cutting textile specimens according to the following AATCC specifications:

1-57, 16B-57, 27-57, 33-57, 61-57, 72-52, 4-57, 16C-57, 31-58, 36-57, 66-59, and 85-57.

These dies are said to be manufactured exactly to AATCC dimensions and feature the original "NAEF" expulsion, which reportedly provides for a much more economical and careful sample preparation than that experienced with the use of conventional dies.

* * *

A E STALEY MANUFACTURING CO
Box 151
Decatur, Ill

Staley's* Automatic Jet Cooking System**

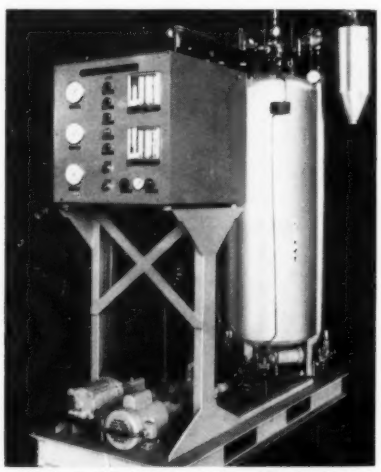
A complete, automatic system for a constant supply of fully cooked starch size of desired solids concentration and uniformity. Said to be a flexible system, tailored to individual manufacturer's needs, it reportedly permits fast start-up and quick changes in size formulations. Economies result from improved mill performance, and from savings in amount of starch used, it is claimed.

Staley's* High-Solids Jet Cooking System

A complete, automatic system specifically designed for continuous cooking of starch preparations, such as finishing mixes, at extremely high solids concentrations. The system is said to be adaptable to a variety of formulations, producing uniform-viscosity pastes to obtain more even size pickup with uniform shadings of colored fabrics and savings in mix requirements.

Staley's* High-Temperature Converter**

A complete, automatic system for continuous preparation of noncongealing warp size from unmodified corn starch. It is said to produce a uniform starch paste of the desired viscosity, modified to any applicable degree of conversion and having excellent film-forming properties.



Staley's High-temperature Converter

* * *

TAYLOR INSTRUMENT COMPANIES
95 Ames St
Rochester 1, NY

Gas-Actuated Temperature Tansmitter

The versatility of the Taylor Sensaire 202T temperature transmitter is being extended by the introduction of a low-cost, gas-actuated model to complement the mercury-actuated version. Measurements as low as —400°F may be made with 1% accuracy, it is claimed.

Similar in design to its earlier counterpart, the new instrument is said to be acceptable in places where mercury is prohibited. Reportedly featuring excellent repeatability, this force-balance instrument is available with standard range spans of 100°F, 200°F, and 400°F. It is stated that interchangeable, all-welded, thermal systems may be quickly installed in the field when it is desired to change spans. A bimetallic element attached to the force beam provides compensation for case temperature effects.

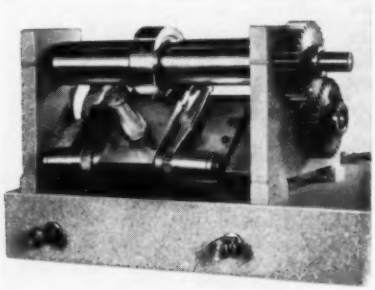
Taylor Sensaire 202T

Among the other features claimed for this new gas-actuated transmitter is the minimizing of immersion errors, especially for long flexible extensions. Long, temperature-averaging capillary bulbs are optional.

Basically similar in design to the mercury version, the gas Sensaire mechanism is calibrated by two adjustments. When necessary to correct for poor conductivity between product and sensing element, a Taylor Speed-Act (derivative response action) unit can be installed for compensation.

Write for Bulletin 98293.

* * *



D C Crimper

TURBO MACHINE CO
Lansdale, Pa

DC Crimper

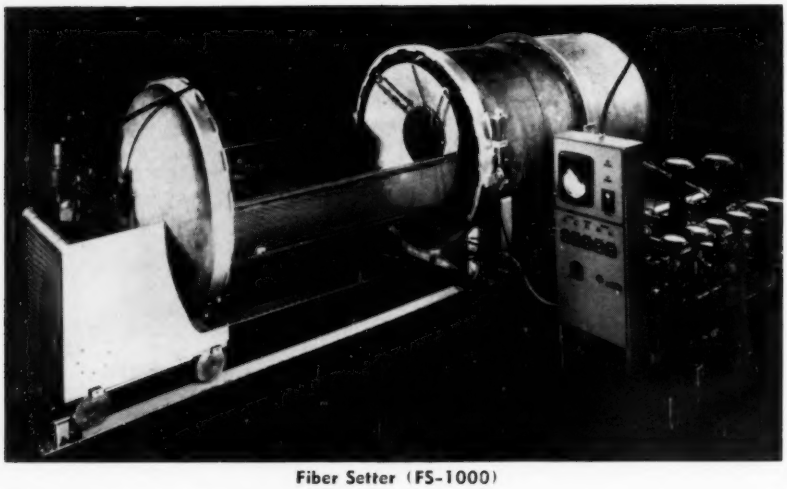
For crimping of synthetic tow. Air cylinders are said to insure proper fiber infeed and control pressure in stuffing box. Adjustable stop holds minimum and maximum roll openings. Tow feeds into crimper at a 45° angle directly from a lead-on roll. Double and triple tow can be run in continuous operation. Crimper rolls are four inches in diameter and from ¼ to six inches wide. Unit adjusts to any roll width.

Fiber Setter (FS-1000)

For processing synthetic fibers in skeins, on bobbins, or as sliver. 1000-lb capacity. Basket carrier is mounted on door and moves into cylinder automat-

*Registered trademark
**Covered by one or more patents and patent applications

*Registered trademark
**Covered by one or more patents and patent applications



Fiber Setter (FS-1000)

ically. Basket can be rotated or oscillated during processing, eliminating need for bulking operation. Equipment reportedly maintains proper amount of moisture in material being processed. No need for separate humidifying operation. Any combination of pressure/vacuum cycle may be used, it is stated.

Synthetic Tow Machine

Combines operations of draw frames, conditioning machines and crimpers. Undrawn thermoplastic fibers in tow band form are drawn, stabilized and crimped in single operation ready for cutting or producing salable tow. Reportedly delivers tow of higher tenacity and lower elongation than possible with conventional machines. It is said to provide greater flexibility with excellent fiber characteristics.

Rotary Dyeing Machine (12-RD-60)

Capacities from four to 250 lbs per batch. Unnecessary to disassemble for repairs or replacement of parts since new drive arrangement is outside the tank. End frames and snug-fitting slide-type door are stainless steel. Full-length overflow at rear of tank permits flushing scum and dirt from the surface of the liquor. Perforated stainless-steel pipes in special arrangement are said to assure uniform heating throughout the bath. All parts which contact dye liquor are constructed of stainless steel.

* * *

WALLACE & TIERNAN INC
25 Main St
Belleville 9, NJ

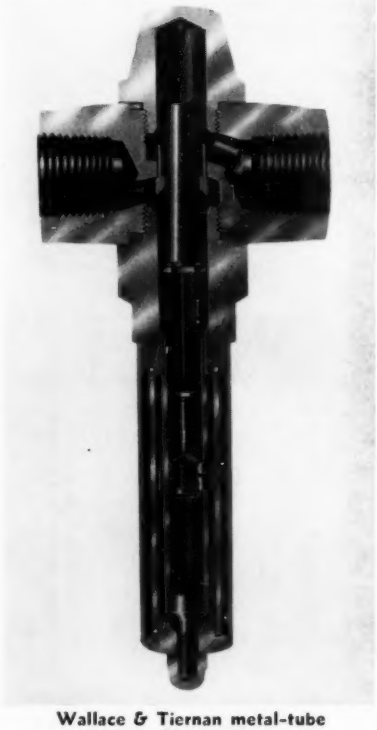
Varea-Meters

A complete range of flow meters for measuring and indicating process flow:

Glass-tube Varea-Meters with 5" or 10" scale tubes, ½" to 3" in diameter. These meters are said to accurately measure flows between 0.5 and 300 gallons per minute.

Metal-tube Varea-Meters (5" scale only) having the same capacities as above. These are used for metering hazardous fluids.

1½" and 3" scale glass-tube purge Varea-Meters. Capacities: 0.01 to 40 gph of water, and 0.10 to 110 scfh of air at pressures up to 200 psi, and temperatures up to 200°F. Suitable for indicating small flows with repeatable accuracy. Interchangeable metering tubes for 29 capacity ranges.



Wallace & Tiernan metal-tube purge Varea-Meter

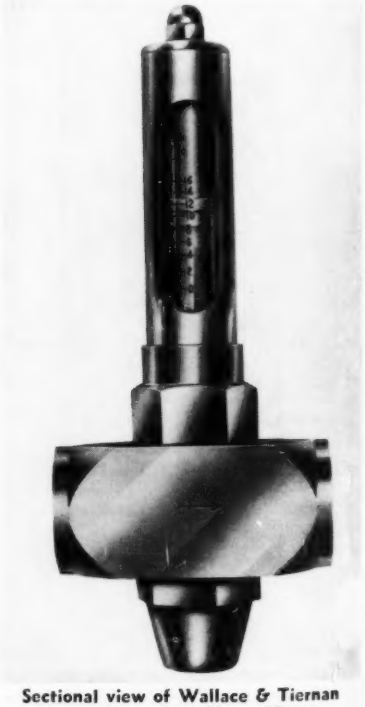
3" scale metal-tube purge Varea-Meters, suitable for metering hazardous flows, and for high pressure and temperature applications. Capacities: 1.6 to 100 gph water, 7.5 to 420 scfh air, at pressures up to 1500 psi, and temperatures up to 400°F. The scale is calibrated with both water and percentage scales, and may be rotated.

Information is available in catalogs 510.100 and 510.200.

Pneumatic Stroke Length Controller for Pumps

Pneumatic controller for Wallace & Tiernan heavy-duty metering pumps controls flow through pump in response to a 3-15 psi air signal from other equipment, allowing proportional blending. Controller reportedly accepts linear, square root or other exponential signals to give rapid response, with 1% accuracy of full scale. Repeatability is ±0.6%

Left: Wallace & Tiernan 3" glass-tube purge Varea-Meter with control valve. Right: 1½" purge Varea-Meter without control valve.



Sectional view of Wallace & Tiernan metal-tube purge Varea-Meter

of full scale. Construction is of corrosion-resistant materials. Mechanism is said to be impervious to climatic or other external conditions. Pneumatic controller is 20½" high, mounts directly on pump.

Typical applications for pneumatic stroking length control are in flow proportional control, blending liquids and solids, remote manual control, and combined flow proportional and automatic pH control.

Further information is available in catalog 420.690.

HIGHLIGHTS OF THE PAST YEAR

P J WOOD
Royce Chemical Co
Carlton Hill, NJ

PREPARATION

HEAT SETTING———Having had advance information that the Electrical Development Association was planning to have a special textile applications exhibit at the Electrical Engineers' Exhibition at Earls Court very early this year, we wrote Christopher Young of Binny & Co asking him to hop over to see it and let us have a report on anything out of the ordinary. He couldn't get there, but he asked his old associate, Eric J Miller, a connection of our family, to do so. He saw the heat-setting apparatus they had in operation and sent the following illustrations of it. (Figures 1-5).

The two methods in use over there were 1) steam, which is hard to apply and which makes it difficult to control shrinking, and 2) hot air, which the manufacturer of this electric machine says reduces the tensile strength somewhat and browns the fabric in some cases and the time required is about 30 seconds.

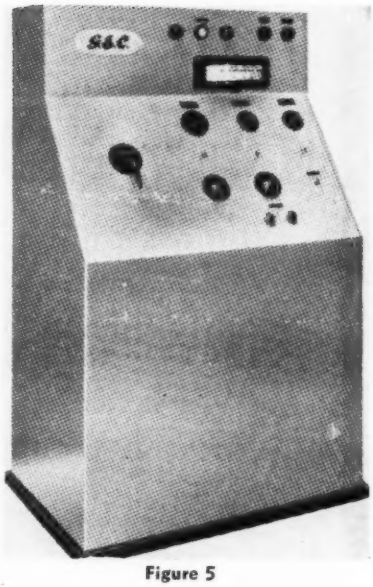


Figure 5

On the other hand, the infrared setting apparatus is said to need an exposure of only 10 seconds, which, they say, does not brown the cloth, thus necessitating a bleaching operation. This very short setting time makes it possible to set the goods after the dyeing has been completed as it does not substantially alter the shades.

Figures 1 and 2 show an infrared panel heater with the shutter shut and open. Figure 3 is an infrared setting plant for nylon fabrics. Figure 4 gives a view of the two infrared heating panels included in the setting apparatus shown in Figure 3. Figure 5 shows the control panel which regulates the apparatus.

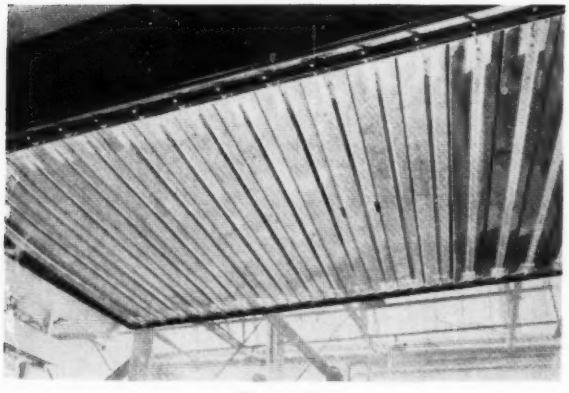


Figure 1

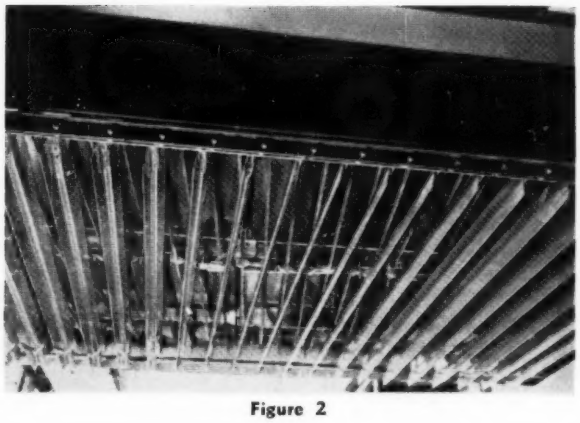


Figure 2

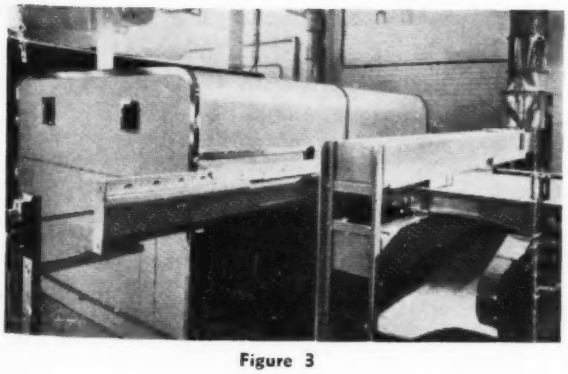


Figure 3

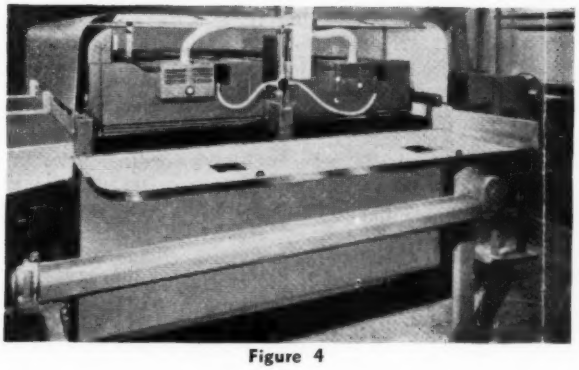


Figure 4

DRYING

LOOSE STOCK DRYER——— Figure 6 illustrates a loose stock dryer that takes up very little room, dries stock with a minimum amount of air, and is easy to clean.

The large degree of evaporation effected with the minimum use of air shows a great saving as compared with some other types of dryers. The requirement of power to drive the fans is extremely low, it is said.

The manufacturer claims that this apparatus is equally suitable for drying any porous material, such as all types of textile fibers as well as porous woven fabrics, knit goods and wool fleeces.

The loss of fibers during the drying operation is negligible.

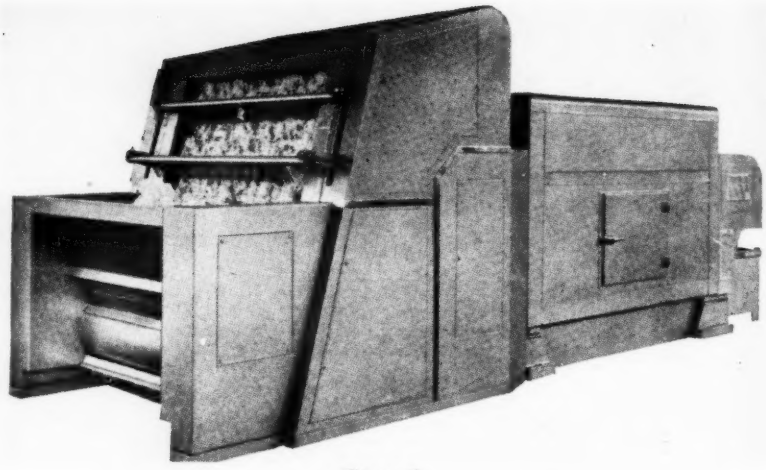


Figure 6

DYEING

JIG———The inventor of the jig illustrated in Figure 7 thought enough of it, not only to patent it in Germany, but also in all foreign countries.

It is another constant-speed machine, which has two ranges of speed at which it can be set, the high-speed range varying between 55 and 130 meters a minute from a low-speed range running from a low of eight to a high of 20 meters per minute, which gives sufficient variety to cover almost any type of dyeing, rinsing, aftersoaping or other kind of aftertreatment; all of these speeds can be conducted with a variation of tension from nothing to 20 kilograms. Speed and tension can be read at all times and adjusted readily.

There are no brakes on the machine; once set for any particular tension, it is fully automatic.

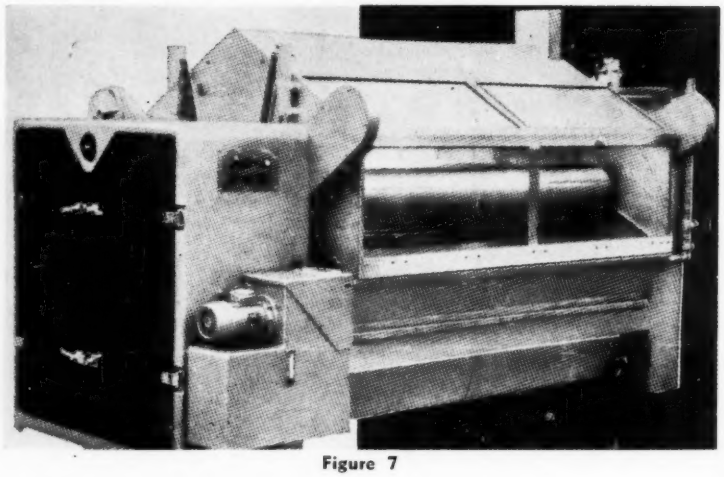


Figure 7

STILL ANOTHER JIG———From our youth up we were brought up on jigs, which we still consider the open-width, batch-wise dyeing apparatus *par excellence*, that is, if one knows how to handle it to obtain the optimum results.

One of the most frequent errors in running a jig is application of too much tension. Hence the strivings and strugglings of the textile dyeing machine manufacturer to develop a jig to which it would be impossible to use over-tension. The so-called "tensionless" jig was the outcome.

The machine illustrated in Figure 8, a Belgian product, is said to be capable of dyeing all weights of fabrics, from the lightest to the heaviest, made of vegetable or synthetic fibers, dyeing them level with a minimum of stretch. The machine is provided with automatic lights which indicate the direction in which the goods are running. No creases, says the maker.

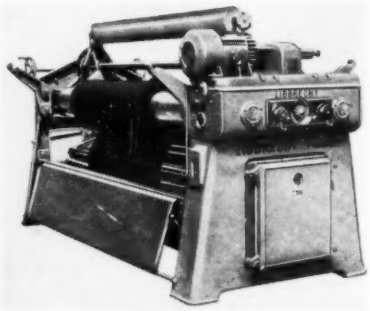
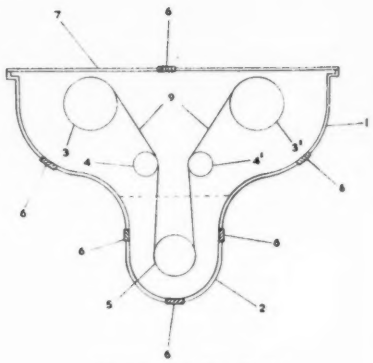


Figure 8

Talking about jigs reminds us that we saw very recently an English patent describing a jig of rather extraordinary design.

As can be seen from the sketch in Figure 9, there is a recess in the lower part of the machine which makes it possible to use quite a small amount of dye liquor, the depth of which is indicated by the horizontal dotted line; in this recess is the large idler roll and above it two smaller idlers of about half the diameter, which direct the fabric to and from the lower idler mentioned.

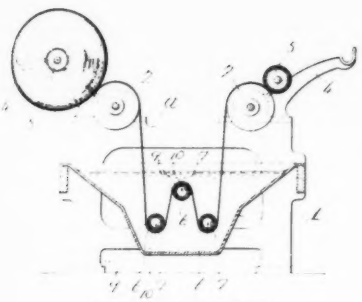


(Courtesy of *The Dyer*)

Figure 9

Heating elements are provided in the bottom of the recessed portion of the trough, in the two sides and in the tightly fitting cover.

The idea is evidently to retain as much heat as possible in every part of the batch being dyed, and of



(Courtesy of *The Dyer*)
Figure 10

course, the tight cover will prevent ingress of air, which would be desirable when dyeing with vat colors. It might help to cure that chronic condition in some types of vat dyeing where the selvages are dyed darker than the body of the goods. It shouldn't be too difficult to provide an inert gas to prevent any oxidation at all in this kind of a trough.

JIG PLUS———A Japanese inventor has found a way of putting the idler rolls of the jig to work. (See Figure 10).

The idler rolls, also called immersion rolls, are perforated and the shafts passing through them are provided with slots, the shafts being fixed and the rollers revolve on them. The ends of the shafts pass through the end-wall of the jig trough and are connected with a suction pump which draws the dye liquor, or other treating liquid through the cloth and returns it into the jig again through the exhaust pipe of the suction pump.

It seems to us that we have seen this circulation principle applied to the jig, but usually by spray pipes between the idler rolls. This method should provide more intimate contact of the dye liquor and the entire width of the cloth, and the pressure is more positive. Probably the chief cause of trouble with any machine using a system of pipes and pumps is the possible accumulation of lint or other obstruction in the pipes.

CONTINUOUS PRESSURE DYEING———The trouble with most pressure-dyeing machines of the past is that they almost invariably employ *batch methods*; this gives rise to difficulties in sampling during dyeing, also in making additions to the dyebath without reducing the pressure.

A pressure scouring — dyeing — bleaching—finishing machine, which could conceivably be used also for other types of pressure processing, has now been evolved that depends for the maintenance of pressure in the system on a novel arrangement of

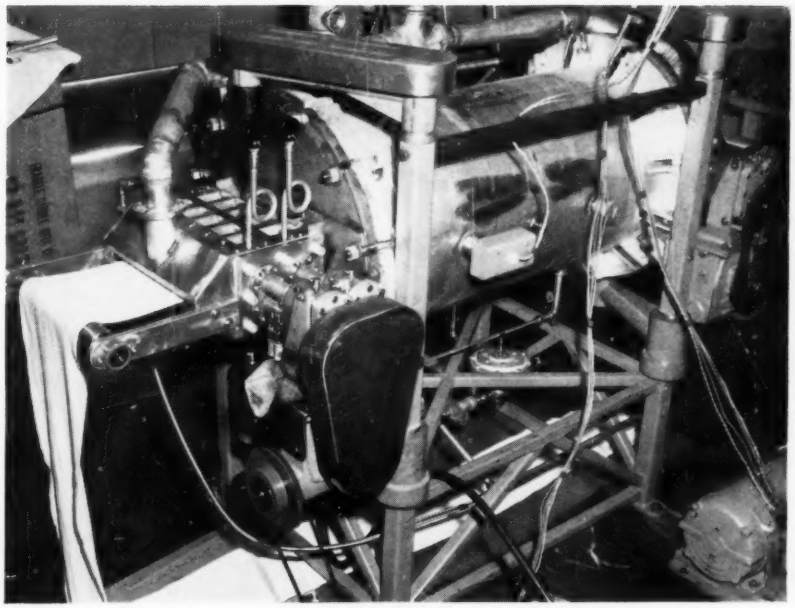


Figure 11a

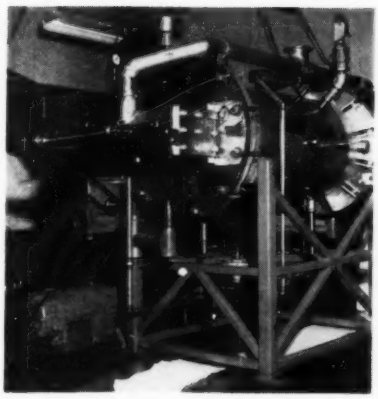


Figure 11b

rollers forming an efficient trap through which the goods enter and leave a bank of idler, or driven rollers contained in a curvilinear receptacle.

It is said to be possible to operate at a pressure of up to 50 pounds per square inch and at temperatures as high as 295°F.

Undoubtedly it will be possible to dye many styles of materials at these temperatures and pressures by a single passage through the machine, but, if several passages should be necessary, at least the progress of the operation can be adequately examined during the course of the dyeing and the necessary correction made by additions before each "end".

It should be possible to provide a laboratory machine that would preserve all the vital conditions and ratios of the large machine so that small samples may be dyed and the formula for the "run" calculated, which would make a one-run operation practicable.

As will be seen from Figure 11a and 11b, this is an open-width machine.

NARROW FABRIC DYEING———A new machine for continuous dyeing of narrow fabrics based on the pad (pressure)-steam principle, was described to one of the European technical dyers' associations early this year. (See Figure 12).

It consists of a troughless padder in which the horizontal rollers of the pad carry the dye solution in the angle formed by the junction of the surfaces of the two pad rollers, at the ends of which are dams to retain the dye liquor.

From the padder the goods pass directly into the pressure steamer through specially designed seals to prevent loss of steam pressure; the length of the steaming period can be regulated by varying the speed of the machine, which has a change ratio of 1:5.

For colors and fabrics that will not withstand high temperatures, this factor can be varied also, at will. Direct colors, for instance, can be padded and passed into steam at 212°F, at atmospheric pressure quite successfully.

It is claimed that, in this machine, the polyester fibers can be dyed at high steaming temperatures *without the use of carriers*, which is surely an added attraction.

Although, so far, the device has been offered only for dyeing tapes,

ribbons and such narrow fabrics, there seems to be reason to suppose that it should be possible to use a wider machine for dyeing regular wide woven or knitted fabrics also.

THREE - ROLL PADDER——Figures 13 and 14 illustrate a novel type of three-roll padder in which the central roll is fixed while the other two rolls can be placed in any desired position around the periphery of the fixed roll.

This makes the machine very flexible, compact and versatile. It can be used with one dip only, as shown in the sketch or as a two-dip padder as illustrated in the other sketch.

It is said that the pressure can be varied independently on either of the squeezer rolls anywhere from one to 12 tons per square inch.

This machine should be useful for both dyeing and finishing.

HIGH - TEMPERATURE YARN DYEING——The apparatus illustrated in Figure 15 consists of a rectangular chest furnished with a frame on which the skeins are mounted. The frame runs on a track extending into the box so that the frame and yarn can be pushed in and out of the chest.

The frame has to be loaded and introduced into the chest, after which hot water is pumped in and heated by a heater in the large piping system through which the liquor is circulated. The heavy door is luted firmly to the door frame so that the apparatus is hermetically sealed, so any desired temperature (pressure) can be obtained.

Dyeing in the skein has the advantage of all open-skein dyeing over package dyeing, that is, that it is not subject to uneven dyeing in the way of "cross-overs". The matter of penetration should also not be a problem and thorough washing after dyeing and after soaping should be simplified.

FINISHING

WIDE SCHREINER——It seems to be becoming standard practice to Schreiner nylon fabrics, and particularly nylon tricot cloths, which, as is well known, are manufactured in very wide widths.

The particular Schreiner calender illustrated in Figure 16 has been designed with these wide knitted nylons in mind; so, in order to accommodate the widest fabrics of this type, it has a width which enables it to handle cloth 112 inches wide. This probably makes it the widest machine of this type in the world.

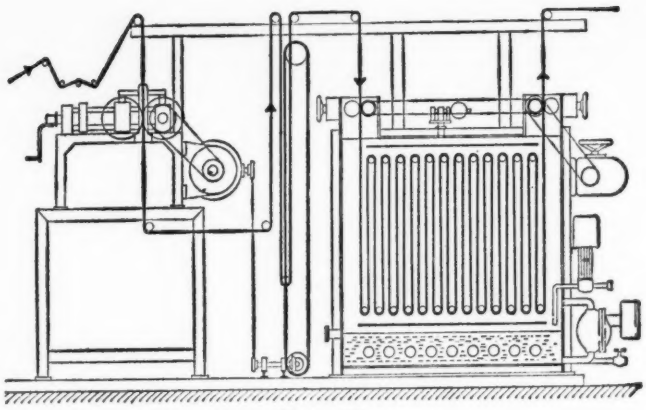


Figure 12

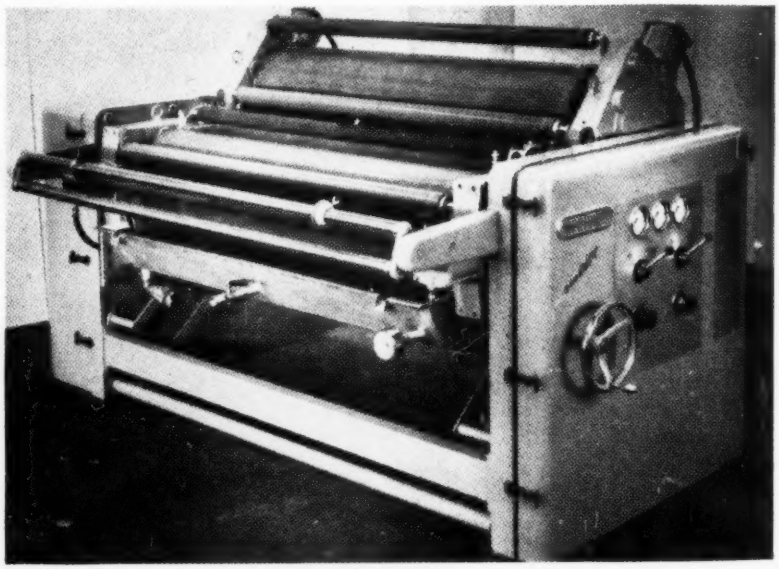
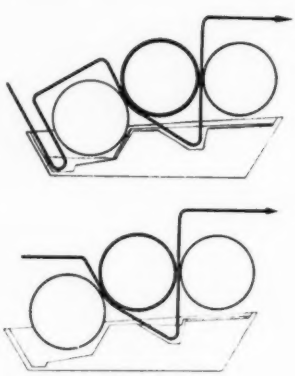


Figure 13



(Courtesy of *The Dyer*)

Figure 14

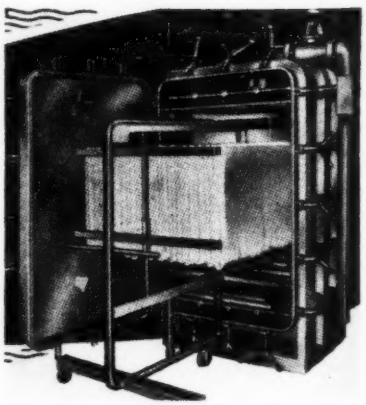


Figure 15

Various distinguishing features stand out in this machine; the cheeks of the calender are fabricated of structural steel, giving added strength instead of the conventional cast iron construction; spherical self-aligning roller bearings are used on both bowls; these are provided with a constant flow of lubricating oil under pressure, the oil being automatically cooled by a special device included in the pump assembly.

(*continued on page 156*)

Proceedings of the
American Association of Textile Chemists and Colorists

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December 12, 1960 No. 25

MORRILL ELECTED AATCC'S 16TH PRESIDENT
Incumbent VPs Reelected

ELLIOTT MORRILL will take office January 1 as AATCC's sixteenth president, as a result of his election at the Association's Annual Meeting, held November 18 in New York.

The incumbent vice presidents, representing the four geographical regions of the Association, were reelected. They are: W George Parks, New England Region; William S Sollenberger, Central Atlantic Region; A Henry Gaede, Southern Region; and Joseph H Jones, Western Region.

Mr Morrill is plant manager of the Indianapolis, Ind, plant of Corn Products Co. He is chairman of the AATCC Committee on Conventions, a member of the Executive Committee on Research, and the Publications Committee. He served as vice president, Western Region, 1957-1959. A member of AATCC since 1925, Mr Morrill was a Charter Member of the Mid-West Section of which he served as vice chairman, chairman and Councilor. He was chairman of the Publicity Committee for the 1947 Convention, Technical Programs chairman for the 1953 Convention and general chairman of the 1958 Convention.

He attended Lombard College in the Univ of Chicago after which he was employed by Ciba, Geigy and Sandoz. In 1927, he joined Rit Products Corp. Through successive acquisitions and mergers, he remained with the organization, serving as chief chemist and technical director, and in 1954 became plant manager.

ELLIOTT MORRILL

Mr Morrill holds the rank of Lt Colonel in the United States Air Force Reserve. From 1941 to 1946, he served with the Chemical Warfare Service of the U S Army Air Forces. Mr Morrill is the author of several papers and has been granted a number of U S and Canadian patents.

W George Parks, professor of chemistry, Univ of Rhode Island, Kingston, RI, will serve his third consecutive term as a vice president. He is chairman of the Committee on Membership and Local Sections, a vice chairman of the Corporate Membership Committee, and a member of the Executive Committee.

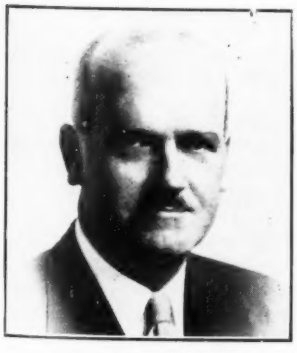
Dr Parks was graduated from the Univ of Pennsylvania with an AB degree with a major in chemistry in 1926 and received his master's degree and doctorate from Columbia Univ. He has been on the faculty of the Univ of Rhode Island since 1931 and in 1950 was appointed chairman of the Department of Chemistry.

Dr Parks has been executive director of the National Academy of Sciences—National Research Council, Advisory Board of Quartermaster Research and Development since 1943. He has been the director of the Gordon Research Conferences, AAAS, at Colby Junior College, New Hampton School and Kimball Union Academy in New Hampshire since 1947.

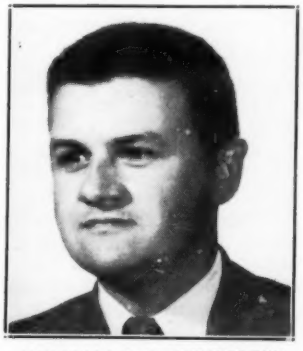
He is a member of the American Chemical Society, American Institute of Chemical Engineers, Society of the Chemical Industry; fellow of the American Association for the Advancement of Science and the New York Academy of Sciences; honorary member, American Institute of Chemists; a member of the board of trustees at Colby Junior College and New Hampton School; and a member of the scientific advisory panel to the Office of Research and Development—Secretary of the Army.

William S Sollenberger, assistant head, Dyeing and Finishing Division, Technical and Textile Service Department of the American Viscose Corporation, Marcus Hook, Pa, holds a BS in chemistry from Gettysburg College, from which he graduated in 1943. In 1947, he took postgraduate special courses at Penn State Univ. In World War II, Mr Sollenberger served as captain in the 94th Infantry Division of the U S Army.

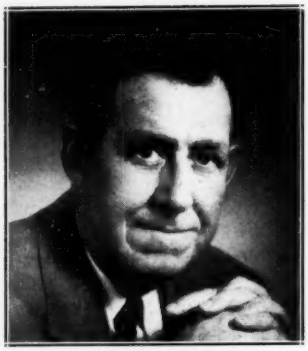
In 1960, Mr Sollenberger was appointed to fill out the unexpired term



W GEORGE PARKS



WILLIAM S SOLLENBERGER



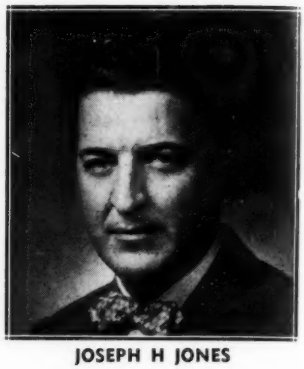
A HENRY GAEDE

He is a member of Committee D-13 of the American Society for Testing Materials.

A Henry Gaede, southern representative of the Laurel Soap Mfg Co, Philadelphia, Pa, resides in Charlotte, NC. He is vice chairman of the Corporate Membership Committee, a member of the Executive Committee, and the Committee on Membership and Local Sections. He has been a member of AATCC since his student days and has served the Piedmont Section as vice chairman, chairman, secretary and Councilor.

Mr Gaede attended Temple University and the Philadelphia Textile Institute, from which he was graduated in 1926. He has been associated with Sidney Blumenthal and Co, Peerless Plush Works and Caledonian Dye Works prior to becoming connected with Laurel Soap Mfg Co.

Joseph H Jones, general manager of Phoenix Dye Works, Cleveland, O, had served AATCC earlier as a vice president from 1954 to 1956. He is a vice chairman of the Corporate Membership Committee, a member of the Executive Committee, the Committee on Membership and Local Sections and the Study Committee on the Location of National Headquarters. He served as chairman of the Mid-West Section from 1947 to 1949 and then as Councilor. He has been a member of AATCC since 1939.



JOSEPH H JONES

Mr Jones was graduated from The Lewis Institute in 1935, after which he went with General Dyestuff Co. In 1937, he joined Phoenix Dye Works.

of C T Anderson, as vice president, Central Atlantic Region, prior to which he was a Councilor. He is a vice chairman of the Corporate Membership Committee, a member of the Executive Committee, and the Committee on Membership and Local Sections. He has been a member of most permanent committees of the Delaware Valley Section and served as vice chairman in 1957 and chairman in 1958.

Membership Applications

November 10-23 1960

NEW ENGLAND REGION

Rhode Island Section

Senior

Donald V Maier—Tech service rep, Arnold, Hoffman & Co, Inc, Providence, RI. Sponsors: L Ricard, R Thornton.

CENTRAL ATLANTIC REGION

Delaware Valley Section

Senior

Philip J Corrozi—Lab tech, Jos Bancroft & Sons Co, Wilmington, Del. Sponsors: H R Hushebeck, R C Squier.

Hudson-Mohawk Section

Associate

James G Bennett Jr—Sr organic chemist, Huyck Felt Co, Rensselaer, NY.

Metropolitan Section

Senior

Edwin C Missbach—Sales tech, Kolker Chemical Co, Newark, NJ. Sponsors: H M Friedman, A Malick.

Transfer to Senior

Carl J Rahm—Pres, Commercial Products Co, Inc, Hawthorne, NJ. Sponsors: Samuel Horowitz, A Rotcop.

Student

Dominick A Martucci — Color matcher, Alliance Chemical Corp, Newark, NJ. Sponsor: George E Linton.

SOUTHERN REGION

Piedmont Section

Senior

Robert S Boothe—Mgr of dyeing, Collins & Aikman Corp, Roxboro, NC. Sponsors: J M Johnson Jr, G A Heath.

Van W Dillon—Supt of dyeing, Chatham Mfg Co, Elkin, NC. Sponsors: W G Green, W B Huntley.

Gabor J Szilagyi—Chemist, Celanese Fibers Co, Div of Celanese Corp of America, Charlotte, NC.

Junior

Robert A Boulware — Salesman, Charlotte Chemical Labs Inc, Charlotte, NC. Sponsors: P S Gilchrist, C W Gilchrist.

Transfer to Senior

Harold B Hatfield Jr—Dyer, Burlington Industries Inc, Dublin, Va. Sponsors: J E Greer, P R Vankerckhove.

Robert S Merkel—Research associate, Chemistry Div, Inst of Textile Technology, Charlottesville, Va. Sponsors: L R Hubbard, J Compton.

Transfer to Associate

Robert N Josey—Res & dev chemist, Collins and Aikman Corp, Albermarle, NC.

Southeastern Section

Associate

Newton T Beck—Sales, E I duPont de Nemours & Co, Inc, Atlanta, Ga.

WESTERN REGION

Pacific Southwest Section

Senior

William E James Jr—Salesman, Jenkins-Wright Co Inc, Los Angeles, Calif. Sponsors: W E Kramer, H K Vogel.

NOT AFFILIATED WITH A SECTION

Transfer to Senior

Kyutae Rhee—Supt, Ahajoo Textile Ind Co Ltd, Taegu, Korea.

Transfer to Associate

Abdul R Adamjee—Director, Adamjee Cotton Mills Ltd, Landhi, Karachi, Pakistan.

STUDENT CHAPTER

Bradford Durfee College of Technology

Dennis M Sabourin — Student, Bradford Durfee College of Technology, Fall River, Mass.

(*concluded on page 136*)

Piedmont Section———

LIGHTFASTNESS OF DYESTUFFS ON TEXTILES*

A. Getting Best Results through Optimum Dyeing Methods
B. Accurate Evaluation through Proper Light Test Procedures

C H A SCHMITT
Sandoz, Inc
New York, NY

In the production of fabrics requiring the best possible lightfastness, there are two factors involved in satisfying the customer:

1) dyeing the fabric under conditions that produce the maximum fastness possible with the dyes used, and

2) being sure that the fabric dyed under the best conditions is then subjected to light test procedures which will accurately predict the end-use fastness.

To obtain optimum lightfastness, one must avoid any condition in the preparation of the goods before or during dyeing that lowers the fastness. Likewise, one should know the effect of cumulative mill processing on the lightfastness of the dyes used. Most data is based on plain dyeings, not after processing. Dye companies are not in a position to carry out these tests because conditions of cumulative processing are never the same in each mill or will they be the same for all fabrics and fibers.

The effect of sequestering agents on copper-containing dyes is discussed as well as the reduction in fastness if these dyes are combined with copper aftertreated dyes. Optimum methods for dyeing of 2:1 metal complex and metachrome dyes are recommended.

It is important that there be:

1) agreement between the buyer and the supplier as to standards for fastness and
2) agreement on the exact method of conducting the tests.

Factors which contribute to good and bad results in both daylight and Fade-Ometer testing are reviewed, as well as the use of the Weather-Ometer and the new humidifier-type Fade-Ometer for duplicating Florida sun tests.

INTRODUCTION

IN the production of fabrics requiring the best possible lightfastness for the shade and fabric in question, there are two factors involved in satisfying the customer:

1) dyeing the fabric under conditions that produce the maximum fastness possible with the dyes used, and

2) being sure that the fabric dyed under the best conditions is then subjected to light test procedures which will accurately predict the end-use fastness. Errors in one or both of these matters can cause no end of complaint and confusion between the dyer, the converter or fabricator, and the consumer.

LIGHTFASTNESS: FIRST IN IMPORTANCE———There is no question that lightfastness of a textile fabric is the number one item of importance. Clothing, draperies, auto and furniture upholstery, awnings, outdoor furniture, all are subject to exposure to light in some degree at all times. The question of exposure and fastness to perspiration, water, sea water, washing, drycleaning, hot pressing, are all secondary because they are periodic or temporary conditions of color destruction. Light exposure is a continuous or semicontinuous reaction on the dyed fabric. With the exception of water (rain) and perspiration, these destructive conditions are given to the fabric at the discretion of the consumer, but light exposure is a matter over which there is little or no control. Can a person always stand, walk or keep their garments in the shade? Do we have curtains on our "greenhouse type" automobiles, and can we keep our furniture and rugs constantly out of the sun's rays?

If we agree that lightfastness is the most important property, then the dyes should be applied under conditions which will produce the maximum fastness reported by the manufacturer.

As each new class of dyes comes on the market, methods of dyeing are recommended by the manufacturers to give the best all-around fastness results for the properties to which the dyes are expected to be exposed.

When one considers the numerous groups of dyes and the multitude of fastness tests required for each dye class and the need for acquiring this information on a host of different fibers, it is no wonder that we are forced to print the words "without guarantee" in all our shade cards. For years customers have chided us about this, but what assurance have we, as manufacturers?

A) Will the dye in question be applied according to the recommended procedure?
B) Will it be dyed on the same fiber as the one on which fastness ratings are based?
C) If the dye is applied on the same fiber, have predyeing operations altered the dyeability and fastness?
D) If conditions A—B—C are satisfactory, what mill processing will the dye be subjected to after dyeing, and what effect takes place on lightfastness?
E) After the fabric leaves the mill, what treatments will be given before being made into end use items?

EFFECT OF MILL PROCESSING ON LIGHTFASTNEESS———When dyeing is the last step before the cloth goes to the consumer, then our ratings for lightfastness are quite valid. For goods which are treated with resin as the final step, we have a reasonable amount of fastness-to-light data, and the dyer has fair assurance of the end-use fastness.

When dyeing is carried out on raw stock, top or yarn, after which the woven material has to go through various mill processes, here is where our problems begin and where we consider there is a great lack of data. What we infer is that there is a lack of information on the effect of *cumulative mill processing on lightfastness.* We do have data on the effect of resins on the direct dyes—the effect of shrinkproofing or crease setting of wool colors, and spot proofing on direct colors. Many companies have

*Presented April 2, 1960 before the Piedmont Section at Winston-Salem, NC

made special studies on other after-treatments, but today there is still a lack of lightfastness data on the cumulative effect of various processes *after dyeing,* as well as the effect of mill processing operations applied *before dyeing.*

The dyestuff industry cannot be criticized for this situation because conditions of cumulative processing are never the same in each mill or will they be the same for all fabrics and fibers. This is the reason we submit a sample of a new dye and close the letter by saying, "We hope your laboratory tests will warrant the ordering of a small lot for a practical mill trial".

A few years ago, a new dyestuff was developed which, in combination with three other dyes, produced the high lightfastness needed for an important fabric. The light tests made in the Fade-Ometer and in Arizona showed it surpassed everything offered to date. Mill trials were run, but the light tests on the finished piece were far below the expected results. A careful checking of the lightfastness after each stage of processing, fulling, carbonizing, and decating, showed results quite different from tests made on the straight untreated lab dyeing. Likewise, a combination of fulling and carbonizing gave a different result from either treatment. When you combine these two and follow with decating you get something else again. In other words, these treatments individually and collectively have a tendency to break down some dyes more than others. Therefore, we emphasize the importance of mill laboratories conducting light tests *after* the dyed material has first gone through all the mill processing to be sure of the end results. These are tests which the dye industry is not in a position to carry out. That is why we must show the words "without guarantee" and ask mills to cooperate in running plant trials on new products.

OPTIMUM DYEING PROCEDURE FOR MAXIMUM LIGHTFASTNESS

Let us assume that the mill chemist and dyer have assured themselves that the lightfastness of the dyes to be used are not lowered by the various treatments after dyeing, or at least any reduction in fastness still allows adequate quality. The question is: Do they know whether the method of dyeing or processing of the fabric *before dyeing* is done under the best conditions?

With the increase in cost of textiles, the public has become more cost conscious and expects better quality in its textiles. It was natural that producers of quality fabrics would have to start improving their product. Before long the drapery trade started asking for 80 hours lightfastness on pastel shades on cotton or cotton/viscose materials. We were able to accomplish this by judicious combinations of selected new dyes; and in fact, on some of the popular bark fabrics like these (samples shown), we obtain 120-140 hours before a break.

EFFECT OF SEQUESTERING AGENTS———As you know, many of the best fast-to-light direct colors contain high amounts of copper. Some dyers had trouble obtaining 20-40 hours fastness although using formulas which we had offered for 80 hours fastness. On checking into their problems, we traced the trouble down as follows.

In one plant, we found that the goods had been given a very strong alkaline scour, including a good amount of sequestering agent, but only a light rinsing before going into the dye kettles. As a result there was a heavy carry-over of alkali and sequestering agent which was removing the copper from the dye complex. By eliminating the sequestering agent, and giving a better rinse, maximum lightfastness was obtained.

In another plant they had been adding a certain amount of sequestering agent to all their dyebaths. True, these products have an immense value and we recommend them with acid and chrome dyes, but in the right place and the right dyes. Sequestering agents, and particularly those active with copper should not be used if you are trying to obtain the maximum fastness to light that these copper-containing dyes are expected to produce.

COMBINATIONS OF COPPER-CONTAINING AND COPPER-AFTERTREATED DYES———Similar destruction of lightfastness of these fast-to-light dyes will take place if they are dyed in the same bath with certain copper-aftertreated dyes. The latter actually removes the copper from some dyes depending on the degree of bonding.

EFFECT OF FABRIC CONSTRUCTION———A series of dyeings was made with the same dye on four cotton and two viscose fabrics. Dye percentage was altered to make all dyeings the same strength. All were exposed simultaneously, yet the fastness ranged from excellent to poor for three possible reasons:

1) residual material from predyeing treatments;
2) the softer cotton fabrics pick up more moisture to absorp atmospheric contaminents which destroy certain dyes;
3) in the case of the viscose fabrics, the variations in fastness are more likely due to differences in reflection characteristics.

The work of Chipalkatti et al (*1*) indicated the influence of the substrate on the fading of dyes. Therefore, it is important that the final choice on dye formulation be based on dyeings made in the lab on the same material as to be dyed in the mill.

2:1 METAL COMPLEX DYES

One of the most interesting features of 2:1 metal complex dyes is that the wool dyer has a fair idea of the shade he is going to get by the time the batch has boiled 10 minutes. Furthermore, these dyes exhibit fastness which in many cases is equal to the chrome dyes. On the other hand, for medium to deep shades where heavy fulling, steaming, potting, full decating, and cross dyeings are involved, then metomega chrome dyeing is recommended.

The 2:1 metal complex dyes exhaust in a near neutral bath and the common practice for many years has been to dye them with ammonium sulfate. However, it has been found that the addition of ½ to 1% acetic acid to the exhausted dye-bath and boiling for another 15 minutes will give a slight improvement in lightfastness to some of these dyes. Likewise, this lowering of pH improves the condition of the wool fiber and shows up in better spinning. Some scouring procedures are apt to cause changes in the fiber, which, if dyed too long at a pH above 7.0, can cause fiber damage. We heard of one case where actual breakage of the fiber tips took place in spinning. This breaking off of fiber in the form of flock was seen to build up on the rolls in spinning to such an extent as to affect the uniformity of the yarn. When the dyebath was acidified, the trouble was eliminated.

TABLE I

1% Lyogen SMK
3% sodium acetate
2½% acetic acid 56%
10% calc Glauber salt
Are added to the machine in the exact order as given at 100-120°F.
Liquor is circulated for 10 minutes at 120°F.
2:1 Metal complex dyes are added and run for 10 minutes at 120°F.
Temperature is raised to boil in 45 minutes.
Run 45 minutes at boil and rinse off.

DYEING 2:1 METAL COMPLEX AND MILLING DYES IN ACID BATH———In recent years, special dyeing assistants, such as Lyogen SMK, have been developed whereby the 2:1 metal complex dyes can be applied at the iso-electric point of wool and thereby preserve the natural softness and properties of the fiber. (See Table I). For milling dyes, a special type, Lyogen SF, actually produces leveling in an acid bath.

OPTIMUM RESULTS FROM CHROME DYES———In the case of chrome dyes, the better types will produce brighter shades and with better fastness to light, fulling, carbonizing and decating when dyed metachrome. This is covered in a paper on the subject by Schmitt (2). Here again, we recommend acidifying the metachrome bath 15 minutes before washing down, especially if one uses phosphates in dyeing. This gives the maximum lightfastness as well as leaving the wool in the best condition. At one time the higher pH of the metachrome bath was considered injurious to the wool fiber, but tests have proven better breaking strength, spinning and wearing qualities are obtained if properly dyed. In dyeing, the ammonium sulfate in the metachrome mordant breaks up, and while there is a rise in pH of the bath, the wool absorbs the sulfuric acid and protects the fiber against the high pH of the bath.

EFFECT OF DECATIZING ON LIGHTFASTNESS ——— For years ammonium sulfate has been recommended in the starting bath of metachrome and 2:1 metal complex dyes. This gives a satisfactory rate of absorption, but we have learned that it has a bearing on the shade in decatizing. Dyeings made with ammonium sulfate contain residual sulfuric acid. When these go into the decator, the high heat concentrates this acid enough to cause a similar effect on some dyes as in carbonizing. Tan shades will invariably come out redder and quite often show poorer lightfastness. The same dyes applied with ammonium acetate show no shade change or effect on lightfastness.

There are tendencies for some dyers to apply level-dyeing colors with acetic acid or weak-acid-dyeing colors with only Glauber salt in order to avoid uneven dyeing. Under certain conditions, this is good practice, but there are many dyes which suffer considerable loss in lightfastness if dyed at a higher pH than prescribed. If such practice is required because of unevenly fulled, scoured or carbonized goods, then one should lower the pH after the bath is exhausted or in the final rinsing. Today we have some remarkable leveling or dyeing assistants, but the best method is to see that the goods are right when they come to the dyehouse.

DISPERSE DYES ON SYNTHETIC FIBERS

EFFECT OF CARRIERS ON LIGHTFASTNESS———Today there is a great deal of synthetic material being dyed with disperse dyes. Many of these fibers require carriers to increase the color yield. Those based on chlorbenzines methyl salicylate or butyl benzoate have little or no affect on lightfastness, whereas those based on the various phenols seriously affect some of our best disperse dyes if not handled properly. This is most important on polyester fibers and some of the loss in fastness is due to effect on the dye, but as may be noted in blank bath tests, the phenol carriers themselves turn brown on exposure.

In the case of 100% polyester, the caustic soda treatment after dyeing is quite effective, but maximum results are obtained only by exposure to a temperature of 385°F for one minute.

We believe more emphasis should be given to the importance of dyebath pH when using disperse dyes. For years acetate was dyed with a small amount of alkali to give a slight degree of saponification and, as they said, "to improve leveling". This has carried over to other fibers, but in some cases works to disadvantage. Most disperse dyes give better yield below pH 7. On polyester fiber, with certain carriers, pH of 5 to 6 is necessary to obtain maximum shade, yield and levelness. Color yield is reduced as pH is increased and, in some cases, pH 8 to 10 destroys the dye.

This question of pH is not so important on carriers of the butyl benzoate, methyl salicylate or chlorbenzine type, but we believe a safe recommendation is 5 to 6 for all carriers, unless the manufacturer has specific data to the contrary. In many cases too high a pH lowers fastness to sublimation.

PROPER METHODS OF LIGHT TESTING

Up to this point we have cited a few examples on factors which contribute to lower lightfastness ratings than should and can be obtained on a fabric with certain dyestuffs. Many more examples could be given and much could be written on the subject. The next point is to be sure that light testing is done in such a way that the production is properly evaluated before submitting it to the buyer for approval. Of equal importance is the method of testing and evaluation by the buyer. Testing for quality depends on two things:

1) agreement between the buyer and the supplier as to Standards for fastness, and
2) agreement on the exact method of conducting the tests.

Unexpected or unwarranted rejections for lightfastness are often caused by two conditions:

1) *The fabric in question is dyed with colors unsuited for the end use of the fabric.* In a vertical mill setup the dyer generally knows the end use and can use his experience to advantage, but the commission dyer is the one who often gets into trouble because of the lack of end-use information. Trouble can be avoided by insisting that the buyer or converter definitely state the requirements, or end use, so that the dyer can act accordingly.
2) *The buyer and the supplier agree on the amount of fastness required, but then disagree on the fastness of deliveries.* So many times no standard is avialable and the desired fastness is expressed in terms of "sun hours" in Florida or Arizona. Because of these ambiguous requirements, trouble begins. If buyers of textiles would follow the method of the US Army and state, "the fabric shall be as fast or faster than the submitted sample", then much trouble could be avoided. When no standard is available, then lightfastness requirements should be

in terms of AATCC Blue Standards, or standard fading hours in the Fade-Ometer.

SUNLIGHT TESTING

To tell a supplier that the fabric shall show no appreciable fading in 40 "sun hours" is no different than ordering a piece of pipe "as long as a snake". Snakes come in all sizes, and so do "sun hours". For the benefit of those who are unfamiliar with earlier work on the controversy over the "sun hours", a few words of explanation may be in order. Furthermore, it may explain why deliveries made of a material in January or March are accepted for lightfastness, but those delivered in June or July are turned down.

In the "sun hour" method, samples are only credited with exposure time when solar intensity *is above* .823 gm /cal/cm^2 per minute, because a long time ago someone decided that any intensity below this threshold was insufficient to cause fading. As a result of the work of the AATCC Committee on Colorfastness to Light and reported at various times by Norton (*3*) and Schmitt (*4, 5*), we proved the errors of basing lightfastness quality on "sun hour" tests. Likewise, this strange idea of no fading below the .823 threshold was completely refuted.

Sun hours are computed from measurements made on the Eppley Pyrheliometer. The energy gathered on the receiving surfaces is converted into electrical energy and registered in millivolts on special recorders. With this instrument, solar intensity is measured in terms of grams calories per square centimeter per minute, which has been converted to the term "langley units" after Samuel P Langley, a pioneer in this field.

If solar radiation continues for 60 minutes at an intensity of one gm/cal/cm^2, then a sample under exposure received 60 langley units. If radiation continues at only 0.5 gm/cal/cm^2 for 60 minutes, then it is only credited with 30 langley units. Intensity of radiation from sunrise to sunset varies from minute to minute from .0 to 1.40 or more gm/cal/cm^2, so it is necessary to have complete integration of intensity and time to compute or express the total amount of radiation received.

To give you an idea of the errors in using "sun hours" as a standard of quality, I would like to discuss the wide variation of results when a given dyed swatch is exposed for 45 *sun hours* in July at three different locations, and by three different methods of exposure.

Samples #1 were exposed in Chicago—#2 in Miami—and #3 in Phoenix. Samples "A" were exposed 24 hours a day, Samples "B" only between 9:00 am and 3:00 pm, then covered from 3:00 pm to 9:00 am. Samples "C" were run the same as the "B" set, but removed from the frames between 3:00 pm and 9:00 am. The nine swatches show a fastness ranging from poor to excellent yet they all were exposed for 45 *sun hours.*

The swatch which was the best actually showed considerable fading, but it was more than twice as fast as the poorest. Grey Scale ratings were 2.3 for the best and 1.0 for the lowest.

Tests carried out on 35 dyed specimens for five separate months showed similar wide variations and convinced us of the errors in testing quality on a basis of sun hours.

In the month of August we ran the same 35 swatches for 60 sun hours and compared them with the same samples run for 45 hours in July. The 60-hour August tests in Florida actually faded less than the 45-hour tests in July. Because of an excess of intermittent clouds in July, it required as much exposure time (sunrise to sunset) to record 45 sun hours as it did for 60 sun hours in August.

The same swatches exposed for 45 sun hours in September showed that much less fading took place than in the July exposures.

An extensive study at selected levels of solar radiation proved that fading occurred at *all* levels of intensity, that is, in the early morning after sunrise, as well as right up to sundown (*5*).

35 dyed specimens were exposed in six separate light test cabinets whereby it was possible, through the use of electronic-controlled curtains over the glass, to expose the swatches to predetermined amounts of radiation, and at four specific levels of intensity. In one cabinet, samples were exposed at a level of .1 to .4 gm/cal/cm^2, a second set at .4 to .6 gm/cal/cm^2, and a third at .6—.823, and the fourth at .823 and above (1 to 1.2)—also on a 24-hour basis and by the AATCC Sunlight Method.

Exposure at the lowest levels of .1 or just after sunrise, and at the other levels below .823 threshold show very similar fading to the same number of langleys as at levels above .823.

Therefore, if one excludes from computation all the solar intensity below the .823 level, that is, before 9:00 am and after 3:00 pm, or throughout the day when there are dips in the intensity during cloudy periods, then it requires many more hours of exposure to accumulate enough langleys to produce the required sun hours during certain months of the year than others. It was noted that tests run in Miami for 45 "sun hours" in July took 302 clock hours and 5767 langleys, whereas in December it took only 143 clock hours and 4727 langleys.

In Phoenix, it required 170 clock hours and 4549 langleys in July, whereas in December only 112 clock hours and 4008 langleys were required.

Fading is not dependent on intensity, but on amount of radiation, and increases in proportion to the number of total langleys at all levels in intensity as well as the amount of UV absorbed from sunrise to sunset. Is it any wonder that 45 "sun hour" tests in July were faded more than in December? It is for the same reason that one can get a rejection on a "sun hour" test made in June or July whereas the same sample would be okay in October or December. If a "sun hour" can vary from 50-80 langleys plus the fact that all subthreshold langleys are ignored to compute the "sun hour", then we are working with a yardstick of quality which is far more variable than any Fade-Ometer test.

The best way we know to date to eliminate these variables in sun testing is to record the exposure in total langleys. (See study by AATCC and reported by Norton (*3*)).

If you are in the habit of talking in terms of Fade-Ometer hours and want to run daylight tests on the langley system, request that "samples be exposed 24 hours per day for total langleys" equal to 100 times the number of hours required in the Fade-Ometer to cause appreciable fading, ie, 100 Fade-Ometer hours will be approximated by 10,000 langleys.

For a check on reproducibility, or for evaluation, AATCC Blue Standards should be run at the same time. When one is not sure of the possible fastness of a fabric, Blue Standards L-3 to L-8 should be sent along with the tests. The test stations should be asked to remove the partial covering of the swatches at 2000 langleys. If the production samples are faded, they should be returned. If only slightly faded, a comparison with the

degree of fading of the standards will suggest to the testing station how many more langleys of exposure will be required to show appreciable fading of the material in question.

For further details on our earlier AATCC work on the advantages of the langley system over the sun-hour method, we refer you to our first papers on the subject published in 1957 (*3, 4, 5*). Since that time a set of samples was exposed every month for 12 months to check on the langley system. The report on this gigantic project is contemplated in the near future and we are pleased to report that our earlier opinions on the accuracy of the langley method has been thoroughly confirmed. (On a recent visit to the automotive plants in Detroit we learned that two of the large concerns expect to change their specifications of daylight exposures from "sun hours" to langleys).

In analyzing the results and data of our 12-month langley study, we did find a few cases where there was a lack of perfect duplication of fading from month to month. However, from the results of work carried on by myself during the last three years, we suspected a possible reason for these variations. A study of the data on temperature and humidity gathered during the 12-month tests indicated that these variations are more likely due to the fact that certain dyes are sensitive to atmospheric contaminants or conditions other than moisture alone or solar radiation.

EFFECT OF HUMIDITY AND ATMOSPHERIC CONTAMINANTS

Our recent studies have indicated that many direct dyes of secondary fastness showed abnormally low ratings on cotton in Florida as compared with other regions or in the Fade-Ometer. This has been generally charged to higher humidity, but work by the writer indicates that moisture is only a contributory part of the abnormal fading, both in depth and shade change. We contend that, when a fabric becomes moist in the evening, various materials from the atmosphere are absorbed. In the wet state, these contaminants react on the dyestuff within the fiber. As the temperature rises during the day, these contaminants become concentrated and very active and greatly increase the fading rate. Salvin (*6, 7*) and Walker (*6*) have pointed to the fading effect of ozone, which at times in Los Angeles reaches 70 parts per million, while in most areas it is usually around 5 to 15. From special tests we conducted in 1957-58, and repeated and confirmed in 1959 and again in February-March of this year, we believe a real thorough study must be made of the effect of *all* components in the atmosphere on dyes.

BAD FADING WITHOUT SUNLIGHT———Our opinions on air contaminants are based on tests in which we obtained bad fading on certain dyes in 24 days of exposure in commercial light test frames in Phoenix, Sarasota, Los Angeles and Fair Lawn, New Jersey, but with *the glass completely covered.* Many dyes showed fading equal to Grey Scale 2 *and equal to the samples exposed to sunlight.* It now appears that much of the bad fading of certain fabrics in Florida which has been attributed to poor sunlight fastness and moisture, was due to atmospheric fading. A paper on this work is in preparation.

FADE-OMETER TESTING

Due to the need for completing light tests in the shortest possible time, most light testing in the US is done in the Fade-Ometer of which there are over 2000 in daily use. Once a fabric has been tested in daylight and found to be satisfactory, the control of future production can be carried out in the machine. It does not matter if the dyed fabric shows higher or lower fastness in the machine, as long as the end use has been assured and agreed upon by supplier and buyer, by previous daylight tests.

Earlier we noted that, quite often, there is no sample of required fastness furnished as standard, and the requirement is given, "to stand so many sun hours". Likewise, the requirement may be to stand so many hours in the Fade-Ometer. Here again, we can start a lot of confusion because not all laboratories run their Fade-Ometers under proper and uniform conditions.

In the past it was not uncommon to have serious disagreement between suppliers and buyers of dyestuffs or dyed materials on fastness to light as indicated by Fade-Ometer tests.

Conditions in this field are much better than they were years ago, because of our better knowledge of the effect of temperature and humidity on the rate of fading (*8, 9*). Furthermore, improvements have been made in the machines, as well as the development of calibration and evaluation methods using the well-known Wool Cloth Blue Standards L-2 to L-8, or with specially dyed papers for calibration.

Optimum results and good correlation of Fade-Ometer and daylight tests can be obtained by running the machine under proper conditions of temperature, humidity and control of the light energy reaching the samples. Failure to do this is the cause of variations in results from one machine to another, and reasons for disagreement between a mill and the buyer.

To operate the Fade-Ometer under conditions to serve as a substitute for daylight testing and to help mill and buyer to agree on the results, the following items require the constant attention of the person operating the lamp.

1) *Location of Machine.* The Fade-Ometer should be located in the coolest possible area in order to operate under temperature and humidity conditions for which it was designed. If the "butterfly" on top of the machine is always open, indicating the blower is operating constantly, it is a sign that room temperature is too high to keep black panel temperatures down to 145°F, and a good exhaust fan should be installed in an outside wall to bring room temperature down as close to 75°F as possible.

2) *Black Panel Temperature and need for constant checking.* If black panel readings run more than 5°F over or below the recently specified optimum temperature of 145°F, then one is bound to have greater or lower degrees of fading. which on some dye/fiber combinations can be of consequence. Abnormally high BP temperatures are caused principally by #3, #4 and #5, which follow.

3) *Failure to check Amperage and the Line Voltage Readings.* The higher the voltage, the greater the intensity of radiation from the lamp which is reflected in higher BP temperature and greater fading. An increase of five volts in the line voltage will increase the fading during a 20-hour test by 10% or two hours. On the control panel there is an adjustment switch, but if the proper BP reading and rate of fading cannot be adjusted with this control, it can be accomplished by other means described in the latest Fade-Ometer manual, or in a paper on the subject by Norton (*10*). These also give instructions on amperage control if needed.

4) *Dirty Air Filters.* A clogged filter in the bottom of the machine will

reduce the volume of air passage over the wet wicks which cool the air and control to a big extent the BP temperature.

5) *Dirty and Hardened Wicks* Passage of air over the wicks as well as the constant evaporation of water help increase the relative humidity within the machine. If the wicks are not changed regularly, they become hard and dry from dust and accumulation of salts from the water, and no longer perform their function of evaporation and cooling. Replace the wicks once a week or more if necessary with new or well washed ones.

6) *Dirty Globes.* As the operator has to remove the globe daily for carbon changes, there is little excuse for using a dirty globe which cuts down on the fading rate. However, an excessively dirty globe is often an indication of another important point (#7).

7) *Chipped Edges of Globe.* Unless care is taken in inserting the globe it is possible to cause minor chipping of the smooth edge. After a period of time, these chips are enlarged to the point that the globe fails to seal tightly against the metal surface of the holder. Entrance of air through these chips or cracks causes a more rapid consumption of the carbons and an increase of glass soiling material, which causes a change in the radiation and rate of fading.

8) *Importance of Calibrating the Fading Rate.* All reporting and evaluation of Fade-Ometer tests should be made in terms of Standard Fading Hours, as developed by the US Bureau of Standards. When a machine is operating at optimum efficiency, it will cause an appreciable fading of AATCC Blue Standard #4 and equal to the amount of fading as measured spectrophotometrically by the Bureau. This is also equal to the change indicated by step 4 on the International Grey Scale. In addition, the Bureau of Standards developed a set of blue papers for daily calibration of the machine, which is the system used by most lab-These papers and the necessary standards can be obtained from the US Bureau of Standards, Washington, DC.

The Fade-Ometer is a specialized type of laboratory equipment, the operation of which should not be taken for granted like an electric clock. If handled properly, it can be the means of a great saving of time and money, but to accomplish this end one must pay attention to the eight points of operation just cited.

RECENT IMPROVEMENTS IN FADE-OMETER, OPERATING TECHNIQUES AND EFFECT ON RESULTS——At one time, Fade-Ometers were operated at a temperature of 105°F, recorded by a bare bulb on the specimen rack. Later it was found that the temperature at the surface of the test ranged from 135 to 200°F, depending on the location of the machine, the number of volts and amperes at the arc, and whether or not the machine was equipped with the various attachments, such as, wicks, ventilating fan and filters.

Through the development of a special black panel thermometer[1] placed in one of the swatch holders, a study was made which showed the need to standardize operation at a black panel temperature of 165°F or lower.

EFFECT OF BLACK PANEL TEMPERATURE ON ACRYLIC FIBERS——With the advent of numerous synthetic fibers, we soon found that even the lower black panel temperatures of 165°F caused abnormal fading as compared with sunlight, particularly on acrylic fibers, such as Dynel, Acrilan and Verel.

EFFECT OF BLACK PANEL TEMPERATURE ON NYLON—UF AND COPPER-TREATED DYES——With many colors, a BP temperature of 165°F causes considerably lower ratings on nylon. Likewise, direct dyes on cotton or viscose treated with UF resins produce much low ratings on many dyes in the Fade-Ometer run at 165°F than in sunlight. Also, direct dyes aftertreated with copper sulfate or cuprous resins rate lower in Fade-Ometers run at 165°F and up. If one has based his selection of UF and copper-aftertreated dyes on Fade-Ometer ratings, we suggest he send them to the commerical stations in Florida or Arizona and we think he will be surprised with their better fastness. However, remember my earlier remarks; send AATCC Blue Standards so you will know what you have for quality when they come back.

USE OF BAFFLES TO LOWER BP TEMPERATURE——Further work has shown that, if Fade-Ometers can be operated at a BP temperature of 145°F, these variations can be greatly diminished. The work of Seibert (*11*) and the Mid-West Section of AATCC (*12*) has shown that temperature greatly increased the fading rate. To help lower the temperature in Fade-Ometers, a baffle was developed by Atlas Electric Devices Co to deflect more air through the wet filters and over the surface of the samples. If you have not installed these baffllles you are definitely working at a disadvantage and we highly recommend them.

USE OF WEATHER-OMETER——Various workers have emphasized that the anomalous fading of some dyes in Florida was due to excessive moisture. As a result, the Weather-Ometer was suggested as a substitute for the Fade-Ometer to duplicate Florida test results.

This has proven to be a step in the right direction. However, the first test method, eight hours of continuous light and water spray, did serve as a quick test to screen out abnormally moisture-sensitive dyes, which had faded so badly in cars during their first few months of use. However, the test was such that it also destroyed and ruled out many of the newer dyes which had been found satisfactory in extended Florida tests.

The next step was the development of the baffle spray for the Weather-Ometer, wherein the lamp shuts off after 3.8 hours, and water is sprayed for one hour against a metal baffle causing a cooling effect within the chamber and the samples.

The baffled spray test, as now used, does not duplicate the results on dyes like the blues used in these tests. These are sensitive to atmospheric contaminants that become more effective under extreme moisture conditions (CI Direct Blue 76). On the other hand, it appears that this method produces similar results as in Florida on the better direct dyes. (CI Direct Green 31, CI Direct Blue 104).

In Table II, note the drop in temperature from 190°F to 78°F and the marked increase in relative humidity from 28% up to 58% when the lamp is off and the spray in operation. However, not all mills have Weather-Ometers, yet most all have Fade-Ometers, so a study was made towards converting them to produce similar results as in the baffled-spray Weather-Ometer. As a result we now have a new humidifier for the Fade-Ometer.

This is a fog-producing type of humidifier with special controls which operates on a cycle of 3.8 hours of light at a black panel temperature of

[1]Atlas Electric Devices Co, Chicago, Ill

145°F, after which the light goes off for one hour during which time the air in the machine around the samples drops to approximately 78°F with a relative humidity of 80-85%. During this hour, the samples absorb moisture, so that when the light goes on they are in a similar condition as samples in a daylight test frame in the morning hours.

Tests carried out on many dyes on various synthetic fibers showed excellent correlation versus sun and daylight exposures, and is supported by a mass of data and statistical analysis reported by Norton (*13*).

This new type Fade-Ometer or conversion equipment for older types does, in our opinion, appear to be an improvement over some existing methods of testing with the Weather-Ometer used by some automobile manufacturers.

Recently a subcommittee was formed in the ASTM to make a study of the different test methods used by the five major automotive companies. It is hoped that the results will make it possible for all five auto manufacturers to adopt one artificial light test, instead of five different methods. This is important to mills producing auto fabrics, as it would make it much easier for them to settle on a dye formula suitable for all auto makers. While we realize that a sun test is necessary before final adoption of a standard fabric, we believe the new fog-type Fade-Ometer can serve as a supplement to the Weather-Ometer as an excellent screening device of new dye formulas or fabrics.

TABLE II
TWIN ARC WEATHER-OMETER
(3.8 Hours light
and one hour spray cycle)
(For automotive fabrics)

	Black panel temp (°F)	*Relative humidity (%)*
	Arcs On—Spray Off	
After 15 mins	190	28
60 mins	190	28
	Spray On—Arcs Off	
After 10 mins	130	38
	120	45
	115	45
	110	49
	102	52
	95	53
	92	53
	85	61
	82	60
After 45 mins	78	58
	Laboratory rel hum: 42%	

SUMMARY

In order to satisfy the buyer's insistence of top lightfastness, it becomes the job of dyer and chemist, with the backing of mill management, to meet the two requirements set forth in the beginning of this paper.

1) Dye selection and application must be done with utmost care and recognition of the various factors which control results.

2) The excellent results of the dyeing department must be realized in the form of acceptance by the buyer, by using proper standards for fastness, and conducting the tests in daylight or the Fade-Ometer under recommended and accepted procedures.

LITERATURE CITED

(*1*) Chipalkatti, Desai, Giles, and McCaulay, *J Soc Dyers Col 70*, No. 11, 487-501 (1954).
(*2*) Schmitt, C H A, *Am Dyestuff Reptr 36*, No. 9, P238-44 (1947).
(*3*) Norton, J E, *ibid 46*, No. 23, P861-83 (1957).
(*4*) Schmitt, C H A, *ibid 46*, No. 9, P351-63 (1957).
(*5*) Schmitt, C H A, *Can Textile J*, 57-65 (August 23, 1957).
(*6*) Salvin, V S, and Walker, R A, *Textile Research J 25*, No. 7, 571-85 (1955).
(*7*) Salvin, V S, *Am Dyestuff Reptr 47*, No. 13, P450-1 (1958).
(*8*) Cunliffe, P W, *J Soc Dyers Col 72*, No. 7, 330-2 (1956).
(*9*) Mc Laren, K, *ibid 72*, No. 11, 527-37 (1956).
(*10*) Norton, J E, *Am Dyestuff Reptr 43*, P628-31 (1954).
(*11*) Seibert, C A, AATCC Research Committee, unpublished report.
(*12*) Mid-West Section, AATCC, *Am Dyestuff Reptr 43*, P497-505 (1954).
(*13*) Norton, J E, De Tex, September 1958; also in ISO Doc 174 (USA Secretariat 67—8/18/58).

ACTIVITIES OF THE LOCAL SECTIONS

Metropolitan

METROPOLITAN SECTION held its final meeting of the year on November 21 at Kohler's Swiss Chalet, at which time Chairman John A Komninos introduced the new officers, Councilors and sectional committeeman who will take office January 1.

Ephraim Freedman

Speaker of the evening was Ephraim Freedman, director, Macy's Bureau of Standards and management councilor, who spoke on "American Standard Performance Requirements for Textile Fabrics".

The presentation included a brief outline of events leading up to the promulgation of these standards; their scope; the contribution of the AATCC, which through the creation of standard test procedures, made these standards possible; the growing impact of these standards on textile manufacturers, distributors, finishers, dyers, retailers and service industries; and the benefits to be derived through adherence to these standards.

The next meeting of the Metropolitan Section will be held in New York on January 20th.

Three past presidents of AATCC attended the Metropolitan Section's November 21 meeting: l to r, Henry F Herrmann, J Robert Bonnar, P J Wood

Delaware Valley

EIGHTY-SEVEN members and guests attended the November 4 meeting of the Delaware Valley Section, held at Beck's-on-the-Boulevard, Philadelphia, Pa.

Prior to the evening session, some thirty members of the Section toured the Torresdale water filtration and treatment plant, one of the largest and most advanced types in the country. A push-button plant, Torresdale is interlaced with automatic and semi-automatic controls. Water flow, chemical feeding filtration rate, and various other operations are regulated through an amazingly flexible combination of switches and buttons.

Elwood L Bean, chief of the Treatment Section, Water Department, City of Philadelphia, addressed the meeting in the evening on the quality of Philadelphia water. In his presentation, he discussed the service of the Water Department to some two million customers in the area. It was pointed out that the Water Department supplies annually 130 billion gallons of filtered water to Philadelphia residents and industry. This averages out to 356 million gallons daily or 164 gallons per person. There are five treatment plants, 13 pumping stations, several reservoirs and nearly 3,000 miles of filtered water piping. The plants, equipment, stations and mains represent a capital investment of $186 million dollars. Behind this huge investment is a simple fact: Water for the consumer as a manufactured product, a product that is costly to prepare and distribute.

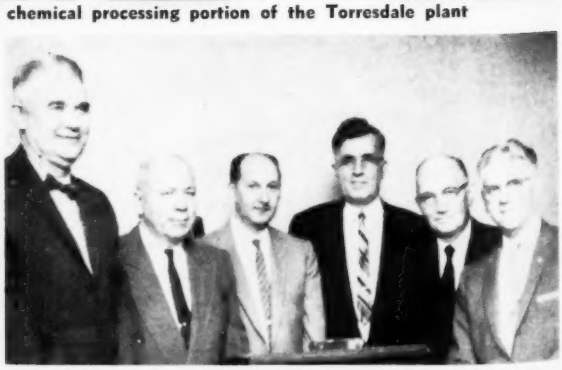
To give Philadelphians pure drinking water, in adequate supply, free of taste and odor, modern water plants and improved mains mean essentially safer and more satisfactory water. Turning out good water by the water department follows the classical pattern of 1) preliminary treatment, 2) filtration, and 3) post treatment. Pre-

L to r: Elwood L Bean, guest speaker; E G Haack, Delaware Valley Section vice chairman; Thomas H Hart, program chairman; George A Elias, panelist; Commissioner S S Baxter, panelist; Percival Theel, panelist; J Dillener, panelist; F Panepinto, panelist; Charles N Kuzma, treasurer; Clarence A Seibert, chairman

Delaware Valley Section members assembled in front of Torresdale filtration plant for plant tour

Visiting the chemical processing portion of the Torresdale plant

Inspecting one of the many control rooms at Torresdale are, l to r: Frank Vellner, Don Robinson, Clarence Seibert, William Bertolet III, Tom Hart, Walter Huber, and Charles Baeringer



L to r: Commissioner S S Baxter, Elwood L Bean, Tom Hart, George A Elias, Percival Theel, and Clarence Seibert

treatment, which includes mixing with chemicals as well as periods for settling, does 90% of the job of purifying and improving the raw water. Filtration provides the polishing touches, while final sterilization with chlorine, as well as some other chemical touches, are given as the post treatment.

However, the provision of good water for two million customers requires much more than filtration and treatment. The Water Department must maintain a 24-hour check on the quality of its output. Daily tests are run on raw water from the rivers, while samples are taken from each step in the water-treatment process at three-hour intervals. Bacterial content is noted daily while taste and odor are checked more frequently. Actual treatment of the water at various stages is controlled by the results of these tests. To ensure that the water remains pure after it leaves the plant, the Department draws samples from 45 points in the distribution system. It covers at least half of these each day.

Following the technical meeting, a panel of water experts were introduced to answer questions. These experts were headed by Commissioner Samuel S Baxter of the Water Department, City of Philadelphia, and Percival Theel of the Philadelphia Textile Institute. Other members of the panel included George A Elias, J Dillener and Dr Panepinto.

L to r: Mrs Edmund Buras; Edmund M Buras Jr, Harris Research Laboratories; Mrs Leonard Smith; Harvey H Hannah, Federal Trade Commission; Leonard Smith, National Cotton Council; Florence H Forziati, National Bureau of Standards.

Washington

HARVEY H Hannah, chief, division of Textiles and Furs, Federal Trade Commission, was the guest speaker at the Washington Section's dinner meeting on November 4 at the Marriott Motor Hotel in Arlington, Va.

Mr Hannah discussed the "Textile Fiber Products Identification Act", which went into effect on March 3, 1960. He stressed the rules and regulations of the act, particularly with respect to labeling and advertising textile materials. Based on the success of the Wool Products Labeling Act of 1940 and the Fur Products Labeling Act of 1952, Mr Hannah anticipated good cooperation from the textile industry. He also outlined the procedures used in enforcing these acts.

The meeting was conducted by Leonard Smith, National Cotton Council. A Eleanor Davis, Membership Committee chairman, discussed the plans for the membership scholarship drive. John Krasny, Nominating Committee chairman, presented the proposed slate of officers. Elections will be held in December. The dinner arrangements were made by Edward C Oliva, Sectional Committeeman.

L to r: Leonard Smith, Councilor; Florence H Forziati, Washington Section secretary; Harvey H Hannah, guest speaker; Edmund M Buras, Washington Section treasurer.

A portion of the audience at Washington Section Meeting of November 4

AATCC Calendar

COUNCIL, COUNCIL COMMITTEES, RESEARCH COMMITTEES
Jan 18-20 (Sheraton-Atlantic Hotel, New York, NY); Jan 18-19—Council Committees and Research Committees; Jan 19 (PM)—ECR, TCR; Jan 20 (AM)—Council

NATIONAL CONVENTIONS
Sept 27-29, 1961 (Hotel Statler, Buffalo, NY); 1962 (Atlanta Biltmore Hotel, Atlanta, Ga); 1963—Boston; 1964—New York; 1965 (Conrad Hilton Hotel, Chicago, Ill)

HUDSON-MOHAWK SECTION
Jan 13 (Jack's Restaurant, Albany, NY—paper on Nonwoven Fabrics); Mar 10 (Johnstown, NY—paper on "Wash-and-Wear" Fabrics); Apr 14 (Waterford, NY—plant tour of General Electric Co's Silicone Div); May 12 (Ladies Night); June 23 (Outing—Antlers Club, Amsterdam, NY)

METROPOLITAN SECTION
Jan 20 (Hotel New Yorker, New York, NY—"AATCC Goals"—Elliott Morrill, Corn Products Co, AATCC president; Feb 17 (Hotel New Yorker, New York, NY—"New Developments in Dye Assistants"—speaker from the DuPont Co); Mar 24 (Kohler's Swiss Chalet, Rochelle Park, NJ—"Polyolefins"—speaker from AviSun Corp); April 21 (Kohler's Swiss Chalet, Rochelle Park, NJ—"Importance of Bow and Skew"—Lucille Rea, Simplicity Patterns, and John Robertson, Mt Hope Machine Co); May 19 (Kohler's Swiss Chalet, Rochelle Park, NJ—Ladies Night, "Detergents for Home and Mill"—Dr & Mrs Foster D Snell, Foster D Snell, Inc (tentative)

NIAGARA FRONTIER SECTION
Apr 7 (Joint meeting with Ontario Section, CATCC, St Catherines, Ont); May 18 (Buffalo, NY)

NORTHERN NEW ENGLAND SECTION
Jan 20 (Hotel 128, Dedham, Mass—Symposium on "Mechanical and Chemical Finishing of Textile Fabrics"— John J MacDonald, Lowell Technological Inst; D D Gagliardi, Gagliardi Research Corp; and Werner von Bergen, J P Stevens & Co, Inc)

PIEDMONT SECTION
Jan 21 (Poinsett Hotel, Greenville, SC); April 2 (Washington Duke Hotel, Durham, NC); June 9-10, 1961 (Outing—Grove Park Inn, Asheville, NC); Sept 23, 1961 (Hotel Charlotte, Charlotte, NC)

Membership Applications——

(concluded from page 125)

November 24-30, 1960

CENTRAL ATLANTIC REGION

Metropolitan Section

Senior

Charles F Sturm—Asst colorist, Toms River Chemical Corp, Toms River, NJ. Sponsors: T Heginbotham, A Fischler.

Transfer to Senior

Walter H Foster Jr—Research chem, dyes application res, American Cyanamid Co, Bound Brook, NJ. Sponsors: F G Strakele, J M Mecco.

Transfer to Associate

Gordon K Carlson—Salesman, Putnam Chemical Corp, Beacon, NY. Sponsors: J A Hopwood, A S Davis.

Delaware Valley Section

Senior

John P Deck—Owner, Eagle Soap & Chemical Co, Reading, Pa. Sponsors: R R Currier, R P Monsaert Jr.

SOUTHERN REGION

Piedmont Section

Senior

Geoffrey D Roberts—Supt, Cone Mills Corp, Proximity Print Works, Greensboro, NC. Sponsors: G F Walz, E S Horney.

Transfer to Senior

Walter T Rutledge Jr—Dyer, Delta Finishing Co, J P Stevens, Wallace, SC. Sponsors: J T Crawford Jr, H G Parrish.

Southeastern Section

Senior

Cecil H McDaniel—Supt, cloth mfg, American Throwing Co Inc, Griffin, Ga. Sponsors: C W Braswell, J T Manning.

Transfer to Senior

Bobby L Harrell—Head research lab, Cabin Crafts Inc, Dalton, Ga. Sponsors: W K Newman, H N Knight.

WESTERN REGION

Mid-West Section

Transfer to Senior

Richard J Klemer—Supt, Faribault Woolen Mills, Faribault, Minn. Sponsors: G P Paine, G J Mandikos.

STUDENT CHAPTERS

Auburn University

Student

Joe W Richardson Jr—Student, Auburn Univ, Auburn, Ala. Sponsor: James H Cox.

North Carolina State College

Berny Bing Lee—Student, North Carolina State College, Raleigh, NC.

AATCC Deceased

Member	*Section*
MARK L DAVIS Cascade Finishing Co Oriskany Falls, NY	HM
JOE RICHARDSON St Mary's Woolen Mfg Co, Inc St Mary's, O	MW
ROLAND O GAGNON Hampton Beach, NH	NNE

Elected to Membership

NEW ENGLAND REGION

Northern New England Section

David W Bryant

Rhode Island Section

*L Russell Maguire**

Western New England Section

August T Breitschmid
*William N Wright Jr**

CENTRAL ATLANTIC REGION

Delaware Valley Section

Paul M DesCoteaux
Charles Hammond
Stanley J Trask (J)

Metropolitan Section

Bertil H Bresky
Floyd H Foster
Gabriel Karoly
David M Roger
Robert E Ritter (A)

SOUTHERN REGION

Piedmont Section

Clayton C Gaddy
Lawrence McAlister Jr
William M Pittendreigh
Paul E Robbins
Micager D Troxler
Gottfried F Waldmann
James R Chandler (J)
Don Gene Detter (J)
C Philip Gamble (J)

Southeastern Section

John G Frick Jr
Jack L Gogek (A)

WESTERN REGION

Mid-West Section

*Edward P Bangs**
*Frederick D Brown**

NOT AFFILIATED WITH A SECTION

Liu Yuan

STUDENT CHAPTERS

Auburn University

Bufrey D Dean (S)
Leron R Dean (S)

Lowell Technological Institute

Phyllis Ann Healy (S)

Employment Register

This column is open for two insertions per year, per member, without charge. Blanks may be obtained from, and filed with, the secretary of the Association, Post Office Box 28, Lowell, Mass. It is understood that these will be open to inspection by prospective employers who can obtain further information from the secretary.

60-32

Education: BS, chemistry, Brown Univ; BS, textile chemistry, N C State College
Position desired: Technical service or trouble shooting
Location: Anywhere
Age: 29; married; three dependents; excellent references

11-28, 12-12

60-35

Education: BS, chemistry, Univ of Athens; BS, textile engineering, Philadelphia Textile Inst; history of education, Univ of Pennsylvania
Position desired: Supervisory work in dyeing, textile chemistry lab, textile processing, research and development
Age: 33, married; one dependent; excellent references

11-28, 12-12

60-34

Education: Secondary school in Avellino, Italy
Position desired: Texile finisher—supervisor
Location: North or South America; anywhere
Age: 60, married, one dependent; references

11-28, 12-12

60-36

Education: BS, textile chemistry, Lowell Technological Inst; courses at Harvard Univ
Position desired: Chemist
Location: France, Europe
Age: 24; single references (experienced)

11-28, 12-12

News of the Trade

Bid Invitations Go Out on Fancourt Building

First movement of plans to construct one of the most modern manufacturing plants in the South got underway on November 21 when the W F Fancourt Co sent out bid invitations to contractors.

The Fancourt firm will build a three-story plant in Greensboro, NC, on a ten-acre tract purchased recently.

Opening date of the bids is set for December 20.

The successful bidder will be announced January 10 of next year, a company spokesman said. Construction will begin early in 1961 with anticipated completion scheduled for August.

Plans call for a contemporary-design building of 22,000 square feet. It will be constructed of brick with an aluminum curtain wall. Windows will be made of solar gray glass.

The new plant will supplement the firm's laboratory and manufacturing operations in Philadelphia and will incorporate executive offices now maintained in Burlington, NC. Modern laboratory and production facilities will be installed to double the company's current production output.

Largest single area in which Fancourt has operated since its founding has been the hosiery field. Today, it reportedly produces finishes for over half of the seamless hosiery manufactured in the United States.

In addition to its Philadelphia and Burlington operations, Fancourt is represented by Chemtex Products, Inc, in Toronto, Ontario, Canada; Paykel Brothers, Ltd, in Australia and New Zealand, and by A M Romero Corp in the Carribean, Central and South American areas.

Officers who will be headquartered in Greensboro are John L Fancourt, president; Thomas Lindley, vice president; Donald Loeber, office manager; and Claude Wolff, chief chemist.

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Proctor Chemical Establishes Scholarships at NC State

Proctor Chemical Co, Inc, Salisbury, NC, has announced a four-year scholarship for a course of study in chemistry or textile chemistry at North Carolina State College. The scholarship has a total value of $2,000 and is offered to the graduates of High Schools in Rowan, Davidson, Davie and Cabarrus Counties of North Carolina.

It is the stated desire of the Company to make a college education available to deserving students and encourage their interest in the Chemical industry.

•

Outgoing and incoming presidents of Woolens and Worsteds of America, Inc, pictured with Miss Wool of America, Patti Jo Shaw, at the organization's annual meeting in New York. G Norman Winder, outgoing president is at left. New president (right) is George A Ott, treasurer of Richard Ott & Sons, of Boston. Meeting marked bicentennial of wool industry in America. Woolens and Worsteds of America was founded two years ago to encourage and increase the use and consumption of American-made woolen and worsted products.

Swiss Cites Greater Economy in European Textile Research

Basic textile research can be conducted in Europe with greater economy than in the U S, according to Dennis P Riley, president of Intertechnical Consultants, Inc, Geneva, Switzerland.

Dr Riley said that U S laboratories can usually do a better job on applied research, but that Europe has the edge in basic research. He stated that U S dyemakers, fiber producers, and mills would do well to look to Europe for some of the ideas that will be developed into the marketable products of five and ten years from now.

He pointed out that there are two ways a U S firm can take advantage of European research brains: 1) contract for a specific project, or 2) build and staff a laboratory. He said that medium-sized firms ordinarily do better by letting out separate projects to laboratories staffed and equipped to handle them. He cautioned against bringing European scientists to the United States, noting that the problems of family and personal adjustment have frequently proved insurmountable, with the researcher ultimately returning home.

Dr Riley, whose firm is represented in the U S by James H Kennedy & Co, Westport, Conn, said that on-the-scene representation is also important in Europe. His firm, Intertechnical Consultants, arranges and supervises research projects for several U S firms, he said. As previously noted, Intertech completed a survey of the status of basic dyestuff and dyeing research in Europe. Thirty laboratories in six European countries were visited and reported upon in depth. The survey was sponsored by European and Japanese textile firms as well as several US dyestuff producers, mills, and fiber manufacturers.

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Solvay to Expand Chlorine-Caustic Facilities

Plans for expansion of chlorine-caustic soda facilities ot Moundsville, W Va, were announced recently by Solvay Process Division, Allied Chemical Corp.

The new facilities, scheduled for completion in 1961, will increase chlorine-caustic soda production by approximately 20,000 tons annually.

According to W H Brumfield, Solvay's president, increased capacity is needed to meet captive chlorine requirements for vinyl chloride and chlorinated methanes production at the Moundsville works. In addition, Solvay anticpates an increase in chlorine demand by the textile and pulp and paper industries served by the Moundsville plant.

The Moundsville installation is one of four chlorine-caustic soda plants operated by Solvay. Other products manufactured at Moundsville are methyl chloride, methylene chloride, chloroform, carbon tetrachloride and vinyl chloride monomer.

Quality Control Program Highlights Dextraset Production

With the recent introduction and reception of its Dextraset, a new resin for "wash-and-wear" cottons, rayons, and other fabrics, Dexter Chemical Corp, New York, NY, has embarked upon a concerted manufacturing program which will produce a variety of resin compounds of related types for the textile and paper industries.

Dextrasets are based on heterocyclic, thermosetting urea-formaldehyde derivatives. Present capacity for their production is said to be about 50,000 lbs per day or from 500-600 drums per week, although Dexter is preparing for greater expansion.

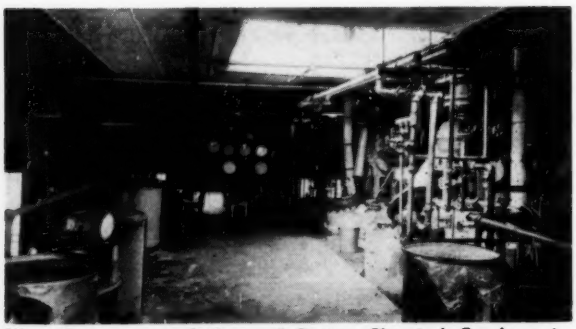
Facilities for storage of finished stock in New York handle approximately 100,000 lbs, supplementing stocks carried in Charlotte, NC. Delivery of finished stock from New York is two nights to the South and overnight to the New England and Central Atlantic states.

Produced in glass-lined and stainless-steel reactors, every batch of Dextrasets is subjected to chemical and fabric testing in the company's quality-control program. Backing up the program are textile application laboratory facilities including padder with pressure-set controls, a specially designed curing oven in which fabrics may be cured simultaneously, flat-bed press, commercial and home laundry equipment, etc. Complete physical testing facilities are available to contribute to the development program.

Key to Dextraset production is the carrying on of the process in solvent system. Efficiency is based on distillation (solvent) recovery.

Dexter officials went into their resin program with the consideration that, with the ever-increasing demand for resins-finished textiles, their products must offer multiple properties at low cost.

The result has been a product which is said to have the advantages of existing resins while offering the added features of eliminating discoloration or "yellowing" of the fabric when ironed and odor buildup. Its performance is said to equal that of any of the market as regards resistance to wrinkling, loss of tensile strength, and shrinkage.



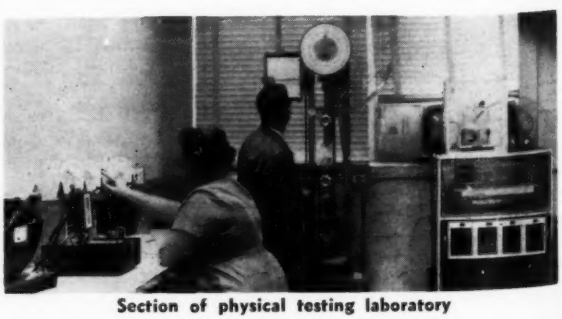
View from upper platform of Dexter Chemical Corp's resin-manufacturng plant—control panel and reactors

Shipping area (resins)—stainless-steel storage tanks for finished resins

Organic laboratory for resin synthesis

Textile application laboratory for resins

Resin application laboratory building



Section of physical testing laboratory

Reinforced Polyester Chemical Processing Tank

The recent installation of a glass-reinforced polyester processing tank in one of the plants of a major chemical manufacturer is expected to eliminate the cost of maintaining a lead-lined steel tank used previously. Over a five-year period, maintenance costs for the metal unit reportedly equalled its purchase price. The new plastic tank, on the other hand, is expected to serve for at least 10 years without major repair operations. With the original cost of the plastic tank half that of its lead-lined steel predecessor, total outlay for the metal unit over a 10-year period can be calculated at six times that of the new plastic tank.

Substantial loss of production caused by downtime during repairs has also been eliminated, it is claimed. Maintenance procedure required that the lead-lined steel tank first be drained and aired. It was then entered by a crew of "lead burners," who burned and scraped away the damaged area and replaced it with new lead. In addition to the substantial downtime involved, the burning operation constituted a fire hazard.

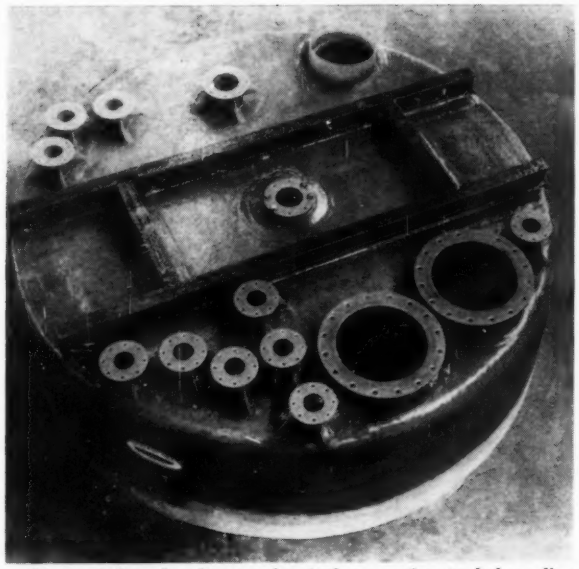
With the new plastic tank, repairs reportedly can be made without loss of production. A minor leak can be blocked effectively by a temporary plastic patch on the outside of the tank surface, it is claimed. Thus, the plant continues to operate until the next down period when a permanent patch can be applied quickly to the inside of the tank.

The plastic tank was fabricated by Carl N Beetle Plastics Corp, Fall River, Mass, a subsidiary of Crompton & Knowles Corp. Because of the need for resistance to a mixure of several acids (dilute HCl, H_2SO_4, and other ingredients) at temperatures up to 180°F, a patented bisphenol A polyester resin was selected. The resin employed was Atlac 382, a product of Atlas Powder Co, Wilmington, Del. Physical properties of the glass-reinforced polyester also influenced the choice of resin because the structural material has to withstand rapid changes in temperature while supporting a load more than four times the weight of the tank itself.

The process calls for temperature variations between 40° to 180°F in an eight-hour cycle; the plant operates at three cycles per day. The glass-reinforced polyester combination is said to provide the internal degree of flexibility required to withstand the stresses imparted by these temperature changes without damage.

The glass-reinforced polyester also is said to have the high strength and rigidity necessary to support 18,000 lbs of lead pipe used for carrying live steam for heating. The lead pipe (2-½ in ID) is passed through an opening in the top of the tank and coiled around brackets on the inside tank wall, then returned through the tank top. The processing tank is 10 ft in diameter and 10 ft high. The top of the tank, also constructed from glass-reinforced bisphenol A polyester, is steel-reinforced to allow it to support an agitator.

Although the tank wall section is only ⅜ to ⅝ inches, corrosion resistance said to be exceptional and strength high. Weight of the empty tank is 3,900 lbs, one-fourth that of its lead-lined predecessor.



Glass-reinforced polyester chemical processing tank has eliminated high maintenance costs required by the lead-lined steel unit it replaced.

Internal view of tank shows brackets around which lead pipe is coiled and then returned through the tank top. The glass-reinforced bisphenol polyester tank, which weighs 3,900 lbs, reportedly has the high strength and rigidity necessary to support an 18,000 lb load of this lead pipe used for carrying live steam.

• NAMES IN THE NEWS •

Chornyei

Ernest J Chornyei has been elected to the position of president and chief executive officer of the Bradford Dyeing Association, USA. Chornyei succeeds *James A Stevenson,* who has been newly elected to the position of chairman of the board of directors. Stevenson will continue to serve in an advisory capacity as board chairman.

Chornyei is currently vice president of the National Association of Finishers of Textile Fabrics and also serves on that organization's "Wash-and Wear" Committee. He is a member of the General Arbitration Council for the Textile Industry and a member of the government's Fabric Committee ACMI, as well.

For the past two years, Chornyei has served as executive vice president of the firm from the company's executive offices at 111 W 40th Street, New York.

•

Hadley

The appointment of *Frank E Hadley* as Chicago sales representative for Chemore Corp, general representative in the United States and Canada for Montecatini Soc Gen of Italy, has been announced. In his new position, Mr Hadley will handle sales of Moplen polypropylene in the Chicago area. Moplen will be produced by the Novamont Corp, Montecatini's wholly owned manufacturing subsidiary, at a new plant scheduled to go on stream early in 1961 at Neal, W Va.

Before joining Chemore Corp, Mr Hadley completed a twenty-year tenure with Catalin Corp of America. At the time of his resignation he was vice president in charge of national sales, thermoplastics.

Lawler

Roberts

Webb

General Dyestuff Co has announced the following executive changes:

John C Lawler has been named director of manufacturing of this GAF division. He will maintain headquarters at the company's Rensselaer, NY, plant and will be responsible for manufacturing operations carried out at this plant and at the Vat Color Department of the company's Linden, NJ, plant. Until this new appointment, Dr Lawler was the plant manager at Rensselaer.

Stiles M Roberts has been appointed technical director of the Division. He also will maintain headquarters at Rensselaer and will be charged with the responsibility for the process research and development activities at Rensselaer as well as dyestuff research and development activities at the Linden, NJ, plant. Dr Roberts was manager, Process Research and Development Department, at Rensselaer until this appointment.

H Alison Webb has been named director of marketing. He will maintain headquarters at 435 Hudson Street, New York, and will be responsible for all sales activities through the General Dyestuff Co sales organization. Mr Webb was sales manager until now.

•

William G Rogers has been appointed a salesman in the Southern district for Du Pont's Dyes and Chemicals Division, succeeding *M S Morrison,* who has resigned.

Mr Rogers, who has been a demonstrator in the district for the past 10 years, will represent Du Pont in the Dalton, Ga, area.

Getsinger

Eastman Chemical Products, Inc, subsidiary of Eastman Kodak Company, has opened a new dye sales office in Providence, RI. Located at 888 Broadway, this office will serve dyers and finishers of synthetic textiles in New England and upper New York state.

C F Getsinger, a sales representative for the past eight years, is now in charge of dye sales activities in this area. He was formerly located in the company's sales-service center in Lodi, NJ.

•

Industrial sales activities of Minneapolis-Honeywell Regulator Co have been combined into four major markets, each headed by a marketing specialist.

Newly appointed manager of the food and fiber market is *R D Clarke.*

•

Lyons

William L Lyons has been appointed California sales representative for the Chemical & Dyestuffs Division of Koppers Company, Inc, with headquarters in Los Angeles. His territory will include all of the state.

Since January of this year he has been a member of the sales force of Koppers Chemical and Dyestuffs Division in Pittsburgh, Pa.

In the California position, Mr Lyons succeeds *N R Hansen,* who was fatally injured three months ago in an automobile accident near Ventura, Calif.

Headquarters of the Koppers Division in Los Angles are at 2313 East Eighth Street.

Hodes

Hohing

Leonard Hodes has been appointed assistant director of technical service for the Onyx Chemical Corp.

Mr Hodes was formerly research chemist in the Product Development Department of Metal and Thermit Corp at the Rahway, NJ, plant.

Onyx Chemical has announced also the appointment of *Henry Mahnken* as chief control chemist, a new position, and *Conrad Hohing* as manager of the Staten Island Plant No. 2.

With Onyx the past 24 years in various positions, Mr Mahnken will be in charge of all control operations.

In his new position, Mr Hohing, who was formerly quality control supervisor, will be in charge of Plant No. 2 under the direction of *Peter P Bouroff*, vice president in charge of production.

●

The Chemical, Dyestuff and Pigment Divisions of General Aniline & Film Corp have announced eight appointments to the staff of *Harold G Shelton*, vice president and group executive in charge of the Divisions, in the reorganization program in this section of the company's operations.

All were associated with the former Dyestuff & Chemical Division of the corporation, which has now been reorganized into three separate divisions, namely the Antara Chemicals Division, General Dyestuff Division, and Collway Pigments Division.

Mr Shelton announced the following appointments to his group executive staff:

G G Bierwirth, director, personnel relations; *J R Bonnar*, director, industry and government relations; *S S Colman*, director, purchasing; *P F Hand*, manager of administration; *A Jaffy*, controller; *C E Stevens*, director, marketing administration; *M R Stevinson*, director, research and commercial development; and *G R Wick*, director, engineering.

Manufacturing operations of the three newly created divisions are located in Linden and Paterson, NJ, Rensselaer, NY, Calvert City, Ky, and Huntsville Ala.

Nisbet

Putnam Chemical Corp, Beacon, NY, has announced the appointment of *J Raymond Nisbet* as sales coordinator. In this position, he will act essentially in a liaison capacity between the technical and sales departments.

Mr Nisbet was previously engaged in technical sales activities with Geigy Chemical Corp.

●

Finn

Parker C Finn has been named sales representative for the Eastern sales district of the Silicone Products Department of the General Electric Company, Waterford, NY. His office location is 254 Elizabeth Ave, Newark, NJ.

●

Reiter

Richard W Reiter of the Resin Division of National Starch and Chemical Corp has been promoted to the position of laboratory manager of the Resin Development Group.

Mr Reiter was formerly in charge of Product Applications Development for the Resin Research Group. Mr Reiter will continue to direct phases of this work, and he will, in addition, be responsible for development and service work in various resin markets.

Parker

Russo

Hodag Chemical Corp, Skokie, Ill, manufacturer of surfactants, has added two to its technical staff.

Rocco L Russo has been named technical service manager, and will deal primarily with field problems, laboratory testing, and new product evaluation. He was formerly with the Smith-Douglass Fertilizer Co, Inc.

Harry B Parker has been appointed technical representative, covering Michigan, northern Indiana and western Ohio, and will be based in Kalamazoo, Mich. Mr Parker joined Hodag from the KVP-Sutherland Co.

●

Collway Pigments Division, General Aniline & Film Corp, has announced the following management changes:

Edward Greening is named director of manufacturing, maintaining his headquarters at the company's Collway plant in Paterson, NJ. He will have line responsibility for the manufacture of the Division's products at this plant and will also coordinate the production of pigments with the directors of manufacturing of the Antara Chemicals and General Dyestuff Co Divisions of General Aniline & Film Corp. Until this new appointment, Mr Greening had held the position of production supervisor—vat colors.

Robert C Hyatt has been appointed director of marketing and will be charged with the responsibility for the sales activities of the Collway Pigments Division. He will maintain his headquarters at 435 Hudson Street, New York. Until his current appointment, Mr Hyatt was manager of administration.

Leon Katz, formerly product manager—pigments, will now be the Division's technical director, responsible for research and process development on present lines of the Division. He will also carry line responsibility for the Pigment Technical Service Laboratory at the company's Linden, NJ, plant, and will be located at 435 Hudson Street.

Irving Roaman, Reliable Textile Co, Inc, has been elected president of Textile Distributors Institute Inc, succeeding *Nat Leavy,* Goldstein & Leavy, Inc, who was elected chairman of the board.

Newly elected vice presidents are *Louis E Kates,* French Fabrics Corp; *Louis J Brenner,* Shirley Fabrics Corp; and *A J Wullschleger,* Wullschleger & Co, Inc.

Ira Jacobson, Cohn-Hall-Marx Co, was elected treasurer, and *Hilda Wiedenfeld* was reelected executive director.

•

The re-election of all officers and directors, and the announcement of the retirement of the chairman of the board of directors highlighted the annual meeting of stockholders of Joseph Bancroft & Sons Co on October 26.

W Ralph MacIntyre was named president of the company for the 14th consecutive year while *John Bancroft Jr* retired as board chairman after 50 years of service with the company. The board chairmanship will remain unfilled for the present time.

In addition to MacIntyre, other officers of the company are: *William R MacIntyre Jr,* vice president and general manager; *Arnold L Lippert,* vice president in charge of research; *Samuel B Bird,* secretary; *Alfred R Valentine,* treasurer and assistant secretary; and *Russell Mayo,* assistant secretary and assistant treasurer.

Re-elected members of the board of directors, in addition to Mr MacIntyre and Mr Bancroft are: *Samuel B Bird, Frank Bromley, Stephen Clark, Arnold L Lippert, William R MacIntyre Jr, Robert H Richards Jr, Harold W Scott, Alfred R Valentine* and *George Winchester.*

As president, MacIntyre automatically serves as chairman of the Executive Committee, to which the following directors were re-elected: *John* Bancroft Jr, Samuel B Bird, Frank Bromley Arnold L Lippert, William R MacIntyre Jr, and Alfred R Valentine.

In announcing the retirement of John Bancroft Jr as chairman of the board, management called attention to his long record of service with the company. A descendant of the man who founded the Bancroft Mills in 1831, Mr Bancroft started as an apprentice in the organization in 1910 when he was 23 years of age and rose through successive positions of responsibility to become president in 1929. Upon relinquishing that office in 1947 he was made chairman of the board.

Charles

Cloney

Gajewski

Clarke

Antara Chemicals Div, General Aniline & Film Corp, New York, NY, has announced the following executive changes, effective last month:

Francis Charles has been appointed to the position of director of manufacture of chemicals within the Division. Until his new assignment, Mr Charles was the plant manager of the company's Linden, NJ, plant. He will temporarily maintain his headquarters at Linden.

James M Cloney has been appointed to the position of director of marketing and will be responsible for all sales activities of the Division. Mr Cloney was formerly sales manager —Antara Chemicals. His headquarters will be at 435 Hudson St, New York.

Frederick J Gajewski has been named technical director, charged with responsibility for the Technical Research and Technical Engineering Departments. Until now, Dr Gajewski held the position of manager—process research and development, in Linden, where he will temporarily continue to maintain his headquarters.

Wallace G Clarke, formerly area supervisor, has been appointed to special assistant to the general manager, *C C Schulze,* and will maintain his headquarters at Hudson Street.

•

Becco Chemical Division, Food Machinery and Chemical Corp, has transferred *E Michael McMahon,* its sales representative in the Philadelphia area, to the Northern New Jersey and Eastern New York State area, and has appointed *Sam L Cassedy* to succeed Mr McMahon in the Philadelphia area.

In his new assignment, Mr McMahon will work out of Becco's district sales office in the Graybar Building, New York.

Previous to joining Becco, Mr Cassedy held various sales positions in the Philadelphia area. He will make his new headquarters in Becco's Philadelphia sales office at 44 East Oregon Avenue.

W H Hampshire (center), former dyestuffs supervisor of the chemicals division of Canadian Industries Ltd, receives a parting gift of power tools from colleagues who feted him recently in Montreal on the eve of his retirement from the company. Discussing his retirement plans with him above are W A Taylor (left), general sales manager of C-I-L's chemicals division, and J D Converse, vice president of C-I-L. Mr Hampshire joined C-I-L in 1929 after serving 21 years in the dyestuffs business with firms in England and Canada. Mr Hampshire and his family will continue to reside at their home in the Town of Mount Royal, Que.

George H Johnson retired as director of textiles, American Institute of Laundering, Joliet, Ill, on September 30, concluding a 36-year career with AIL.

Born in Haverhill, Mass, Mr Johnson began what was to be a long and illustrious career in textiles when he was graduated from Lowell Textile Institute (now Lowell Technological Institute) in 1920. On March 1, 1924, he was named a senior fellow at the Mellon Institute of Industrial Research, Univ of Pittsburgh, a recipient of the fellowship sponsored by the Laundryowners National Association, forerunner of AIL. He served LNA as director of research at Mellon.

In April, 1938, he was named general manager of American Insitute of Laundering, which had dropped the LNA designation the year before. Mr Johnson served in that capacity for 11 years, then as vice president, and, for the past year, director of textiles.

One of Mr Johnson's most important contributions has been the fostering of a better relationship and understanding between the textile and laundry industries. It was out of this closer association that the AIL Certified Washable Seal Program emerged in 1935.

Throughout his career, Mr Johnson has proved a prolific writer, contributing innumerable articles and reports to Institute publications, the textile press, textbook writers, and encylclopedia publishers. Also, his dedication to the field of textiles and his wealth of knowledge have brought him many awards. Mr Johnson is proudest of the "Man of the Year" award presented to him by the Textile Square Club of New York on his twenty-fifth anniversary with AIL.

George H Johnson receives congratulations from General Manager George Isaacson during a quiet moment of a party observing Mr Johnson's retirement after 36 years at AIL.

●

James N McDonald has been named sales manager of American Cyanamid Company's Fibers Division.

Mr McDonald, who has held the post of commercial development manager since February of this year, joined Cyanamid from Beaunit Mills, where he was product manager for polyester fibers.

In his new post, Mr McDonald will direct Cyanamid's sales operations for Creslan acrylic fiber.

OBITUARY

HENRY A WELLS, 49, assistant district manager of Interchemical's Color & Chemicals Division, died Monday, November 7, in Rock Hill, SC after a sudden heart attack.

Mr Wells was born in New York. After being graduated in 1933 from Lowell Textile Institute, he joined Warwick Print Works and later was with Ware Shoals Mfg Co and with Calco Chemical Division of American Cyanamid Co. Since 1948 he was affiliated with Interchemical Corp. He was a member of AATCC and AATT.

Surviving are his wife, Evelyn B Wells, two sons, Robert and Henry Jr, his mother, Mrs H A Wells, and sister, Mrs Elsa Wells Ryer. Funeral services were conducted at The Episcopal Church of Our Savior at Rock Hill, where he was Senior Warden. Interment followed at Green-Wood Cemetery, Brooklyn, NY.

●

HERBERT GRANDAGE, 69, former president of Spool Cotton Company and a charter member of AATCC, died October 12.

Mr Grandage joined the Clark Thread Co in 1921. In 1937, he was appointed vice president of the Spool Cotton Co, now known as Coats & Clark's Sales Corp. He served as president from 1947 until March 1, 1951, when he retired because of poor health.

Abstracts

Preparing Fabrics for Printing

Anon. *Dyer* 123, 979, 982, June 17, 1960

The preparation of fabrics for printing has always been an important and difficult problem for the dyer, and demands rigid control in desizing, bleaching, and other processes related to the removal of impurities.

The required fabric characteristics must be developed so that the design is put on the fabric while it is at the same dimensions, and possesses the same degree of crimp, as the finally finished fabric. Further, at the time of printing the warp and filling yarns must be at right-angles to each other and in perfect alignment.

With acetate fabrics the difficulties are even greater, since the fabric must be in a relaxed state but free from creases.

Fabrics made from nylon, Terylene or Tricel often require setting before printing, since otherwise there is a danger of crease formation during a high-temperature process such as steaming or aging to obtain dye fixation. If heat-setting methods are used, there is usually a degree of discoloration and it is necessary to rescour and possibly to bleach. There is a danger of non-uniform setting, particularly between the immediate selvage area and the body of the fabric. If the differences in degree of setting are appreciable, dye take-up can be affected unless pigment-type dyes are used.

In steam setting the danger of non-uniform treatment is even greater, as most machines provide for steaming on a roll, and there is a possibility of shade variation between the sides and the middle of the fabric and between the outside and inside ends of a batch.

When fabrics require dyeing prior to printing, even greater problems arise. If the dyed ground is to be discharge-printed, for example, the dyer may have to state that he cannot produce certain shades, as suitable dischargeable dyes are not available.

When two or more dyes must be used to obtain a given shade, it is preferable that they have similar dyeing properties. Similarly, the dyes must have adequate fastness, not only for the end use but also to withstand the printing and associated processes, such as steaming and washing-off. They must also be fast enough to resist change of shade when given such chemical finishes as crease- or shrink-proofing, or sometimes even rubber-proofing.

●

Progress in Antistatics for Textiles

Anon, *Fibres & Plastics* 21, 245-6, August, 1960

Static electricity is a charge generated by friction between nonconducting surfaces. Its phenomena are generally recognized. Of most importance to the textile industry are the

mutual attraction of oppositely charged particles (resulting in the pick-up of lint and dirt on the fabric), the mutual repulsion of bodies bearing a like charge (causing difficulty in aligning yarns), and the occurrence of sudden discharge (eg, in the form of a spark) when contact is finally made with a conductor.

The significance of these phenomena is observed in customer dissatisfaction with textiles which acquire large static electric charges in use. At least as significant are the problems which are encountered in the textile manufacturing process due to static electricity, and which can lead to reduced plant output, lowered product quality, increased product waste, and hazard to both personnel and equipment.

It is the newer man-made fibers which exhibit the problem of static electricity to the danger point. These fabrics are characterized by the twin properties of low surface conductivity and low moisture absorption. However, not all man-made fibers are subject to the problem in the same measure.

To decrease the tendency of a fabric to accumulate static, the conductivity of the material must be increased so that the charge may leak away as rapidly as it is formed. In nontextile operations this is often accomplished by grounding the material, but this is inefficient in textiles.

The alternative is to raise the surface conductivity of the textile by increasing the amount of moisture retained, either by increasing the relative humidity of the air within the plant or by introduction of a strongly hygroscopic chemical into the fiber.

The ideal antistatic agent should be colorless, compatible with dyes and finishing agents, and without adverse effect on the fiber. It should also be fast to washing and drycleaning. No such ideal agent has been found to date, the author states, but progress has been made.

Nondurable antistatics, used principally as processing aids, are usually surface-active agents (mostly quaternary ammonium or polyoxyethylated compounds).

Durable antistatics are cross-linked ion-exchange resins which are formed in the fiber. These resins generally contain polyoxyethyl chains as well as ionic groups. They are applied to the fiber from aqueous solutions by interaction with a cross-linking agent (eg, an acidic or peroxide catalyst).

A compound based on the cross-linking principle, recently patented by Du Pont, is also described.

The Effect of Solvents on Wool Dyeing

Peters, L, Stevens, C B, Budding, J, Burdett, B C and Sykes, J A W, *J Soc Dyers Col 76*, 543-50, September, 1960

Since the observation was made that an addition of certain sparingly water-soluble solvents to aqueous dyebaths produces a marked increase in the rate of uptake by wool of certain types of dyes, a considerable amount of work has been carried out to establish the mechanism of the process and to evaluate its technological importance.

From these results, and from experimental bulk dyeing, practical methods for dyeing loose wool, slubbing and yarn have been developed by the Geigy Co. It appears that completely satisfactory results can be obtained, using conventional machinery and procedures, by dyeing for as short a time as 30 minutes at 70-80°C, using a wide range of neutral-dyeing metal-complex dyes or selected fast-to-milling acid dyes, with benzyl alcohol as the solvent.

A further observation by the present authors was that an addition to the dyebath of cationic agents, eg, quaternary alkyl ammonium or pyridinium compounds, reduced the hydrophilic character of polysulfonated dyes, thus promoting the uptake of dyes which otherwise do not respond to the presence of the solvent.

The effect of adding benzyl alcohol to melange printing pastes, and to pastes used in screen and roller printing on wool, has also been investigated. It is found that there is a great increase in the rate of fixation of dye, and chlorination of the wool is unnecessary.

In order to study the mechanism of solvent-assisted wool dyeing, using benzyl alcohol as the solvent, measurements have been made of the sorption of the solvent from aqueous solution by wool, the solubility of the solvent, and its effect on the surface tension of water at different temperatures. The heats and entropies of sorption, surface formation and solution are consistent with the hypothesis that the sorption of benzyl alcohol by wool most probably consists merely of physical adsorption on the intermicellar surfaces in the fiber.

Increasing swelling of the wool fibers in aqueous solutions of the solvent is not apparent, and the accelerated rate of dyeing is shown to depend on the affinity of the dye for the solvent, as measured by the partition ratio of dye in the solvent to dye in the water. The solvent lowers the activation heat barrier, but increases the activation entropy barrier; whether it accelerates or retards dyeing depends on which is affected to the greater extent.

Twenty references to the literature are cited.

•

Improvements in the Coloring of Triacetate Fiber Goods

Somers, J A, *Textile Recorder 78*, 57-61, Oct, 1960

The commercial cellulose triacetate now available contains about 60 percent of combined acetic acid. As the result of this high proportion of acetyl groups, there are many fewer free hydroxyl groups in triacetate than in ordinary acetate fiber molecules, and triacetate fibers are thus more hydrophobic. They are also more crystalline and have a denser fine structure, so that triacetate fiber goods are less receptive towards most of those dyes which are commonly applied to ordinary acetate fibers.

If triacetate goods are heat-set prior to dyeing (for dimensional stability), the fibers become still more crystalline and their power to absorb dyes is further lessened.

The reluctance of triacetate fibers to absorb dyes can be overcome by the use of high-temperature dyeing methods (eg, at temperatures exceeding 100°C) and by the use of dye-carriers or fiber-swelling agents in the dyebath (eg, tri-*n*-propyl phosphate or di-ethyl phthalate. The effectiveness of the latter product is said to be partly due to its swelling action.

Diethylene glycol diacetate is another powerful swelling agent for triacetate. By its use these fibers can be dyed quite as readily as secondary acetate, it is said.

Other dye-carriers suitable for use with triacetate include benzoic and salicylic acids, ortho-phenylphenol, triacetin (glycerol triacetate) and caprolactam.

Triacetate fabrics can also be printed by the dye-carrier technique. By the use of triacetin, for example, it is possible to apply disperse, oxidation, premetallized, nitro-diphenylamine and azoic dyes. A typical printing formula for disperse dyes includes also the addition of methylated spirits and aqueous methylcellulose ether thickening. The printed fabric is dried and steamed for one hour at 220°F.

If the triacetate fabric is pretreated with caprolactam solution, it can be dyed or printed to full shades. Details are given of the production of a black shade by this method.

Another printing process for disperse dyes, which is described, utilizes alpha phenyl ethanol as carrier

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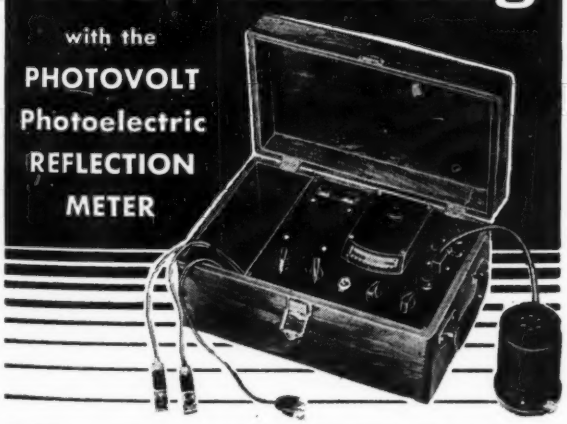

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Abstracts

(*concluded from page 152*)

and sodium alginate as thickener. The printed fabric is dried, preheated at 120°C, and heat-set at 230°C for 15 seconds. The heat treatment is said to raise the safe ironing temperature of the finished material from 200°C to 220°C and even to 240°C.

A process for applying vat dyes to triacetate in printing, using thiourea dioxide (instead of a hydrosulfite compound) as the reducing agent, is also described.

•

Vyrene, New Synthetic Elastic Yarn

Boulware, L M, Papers AATT, *Modern Textiles* 41, 46-8, August, 1960

Vyrene is the registered trademark of the U S Rubber Co for its new synthetic elastomer created to supplement the range of the company's Lastex yarns. The Federal Trade Commission has adopted the generic name "Spandex" to identify Vyrene and other synthetic elastomers.

Vyrene is composed of a linear polyurethane, obtained as a reaction product in the petrochemical industry. Compared with rubber thread, Vyrene thread has several advantages. It is not subject to oxidation, as rubber thread is, and has "reasonable tolerance" for drycleaning solvents, which accelerate the deterioration of rubber. It can also be produced in finer sizes, and has a tensile strength substantially higher than that of rubber thread. The modulus of elasticity is high and comparable with that of rubber.

Vyrene yarns are heat-sensitive. Fabric finishing can be carried out at 180°F, but at 200°F or over trouble may be encountered.

The new elastomer is receptive to certain types of dyes. Disperse and selected acid dyes have proved to be satisfactory, the author says.

Vyrene thread, suitably covered with Lastex constructions, has been successfully manufactured into a variety of fine elastic fabrics, both woven and knit, which are being used for making underwear and foundation garments. Woven swim-suit fabrics are also being produced from these ultra-sheer yarns.

Vyrene's resistance to drycleaning makes practical the use of elastic fabrics in outerwear, especially sports wear. Garments made with Vyrene thread are said to stand up well in service, including laundering.

At the present time the production of Vyrene is limited, and it is furnished only in covered form, eg, with a loose spiral wrapping of nylon.

•

Dyeing Acrylics in Blends

Aldridge, A and Jordan, P V, *Man-made Textiles* 37, 53-4, August, 1960

The two types of acrylic fiber which are of the greatest importance in blends, particularly for clothing and household textiles, are the straight acrylics (eg, Orlon 42 and Courtelle) and the copolymers (eg, Acrilan). The authors discuss the fibers falling in these two classes in blends with wool and cellulosic fibers.

Acrylic fibers have many characteristics resembling those of wool. They also offer several advantages, among the most important of which are low weight, resistance to mildew and bacteria, and rapid drying properties. They also show improved resistance to chemical attack.

In considering first the dyeing of unions of wool with fibers of the Courtelle type, the selection of dyes for the acrylic component is restricted for various reasons; eg, disperse dyes stain the wool too much. Acid dyes, applied by the cuprous-ion process, have been used extensively in the past but have been largely discontinued nowadays, owing to technical difficulties.

When using basic dyestuffs the wool component, as might be expected, takes the dye first. As the temperature of the dyebath is raised to about 85°C (ie, the point of thermoplasticity), the basic dye migrates into the acrylic component. Many dyes are available which will, on exhaustion of the dyebath, leave the wool completely unstained, so that dyeing of this component may then be carried out with little or no difficulty.

When dyeing these blends there are three methods which may be used. These are: 1) the two-bath process; 2) the one-bath, two-stage process; 3) the one-bath process.

In the two-bath process the acrylic fibers are dyed first with the basic dyes in an acetic acid bath. The wool is cleared, if necessary, by a treatment with Decrolin, and is then dyed in the conventional manner in a bath as nearly neutral as possible.

The one-bath, two-stage method is recommended for pale and medium shades only. It may be carried out by dyeing the acrylic component first and the wool second, or vice-versa. The first method is probably better.

The one-bath method may be used for pale shades, but if more thar 1% dyestuff is used, precipitation may occur between the cationic and anionic dyes.

In dyeing blends of wool and Acrilan, one class of dyestuffs (acid dyes) may be used for both fibers. Here the "Chem-Acril" method can be used to advantage, the authors state.

Blends of acrylics with cellulosic fibers may be dyed by first applying a basic dye to the acrylics and then direct dyes to the cellulosics, or by dyeing the cellulosics first with vat or azoic dyes and applying the basic dyes later. Pale shades are dyed with direct and disperse dyes in the same bath.

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Highlights———

(*continued from page 124*)

Pressure can be applied to the bowls to a maximum of one ton per lineal inch.

Heat is applied to the top steel (engraved) bowl by means of a radiant heat device which gives a maximum temperature of 410°F, which should be ample for the purpose.

A push-button attachment allows the pressure between the rollers to be relieved during passage of a seam, even though there is no separation of the rollers. Should any emergency arise, the heating hood is swung away from the top bowl and the pressure is released so that the rollers separate, so that there is no damage either to the goods being processed or to the machine.

CURING MACHINES———Figure 17 represents what the maker calls a high-temperature polymerizing stove.

Usual practice here seems to be to carry out this operation on the tenter, provided with some special form of heater to give the high temperatures required for the necessary period.

This apparatus is the roller type and resembles, in outward appearance, the steam ager. The same textile finishing machinery manufacturer makes another type in which the goods are festooned which may be more desirable for some goods.

It is said that the machine will satisfactorily handle types of goods varying greatly in weight and construction, from "the lightest rayons to the heaviest cotton drills". Speeds up to 100 yards a minute can be attained and temperatures as high as 420°F can be used.

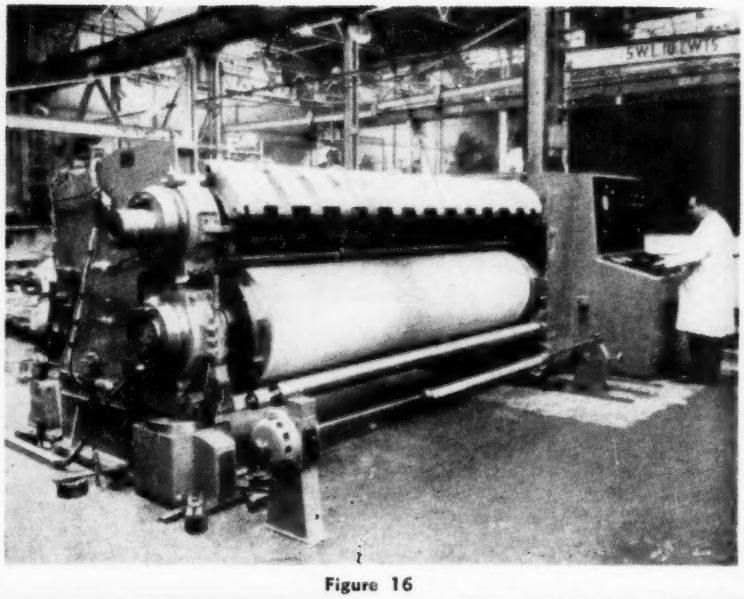

Figure 16

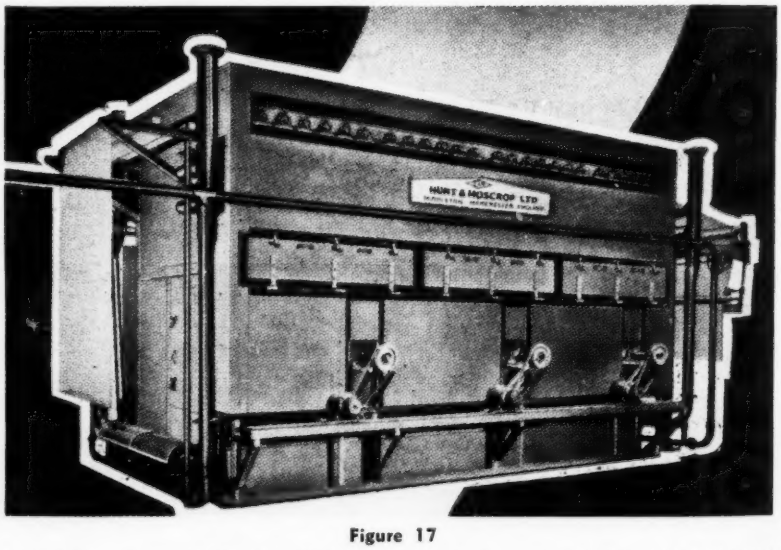

Figure 17

LABORATORY

STOPPERS———From the viewpoint of safety alone, these new rubber stoppers are desirable; it looks as if it should be a lot easier to push a glass tube through them without breaking than it would be to insert one into one of the old-fashioned solid type through which a hole has been made with a cork borer, never a satisfactory operation.

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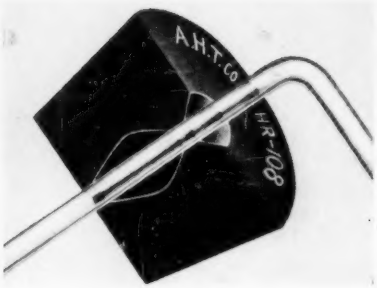

Figure 18

The tube is held at two points in the stopper with what appears to be an adequate seal of rubber. The rubber is said to be of the highest quality and is endowed with long life and a good resistance against heat.

Figure 18 shows the unique form of the orifice which makes the stopper so superior to the ordinary solid type.

INSTRUMENTATION

REFRACTOMETER —— Figure 19 illustrates a piece of apparatus, the one under consideration being in convenient pocket form, supplied with a leather case. It is probably more commonly used in the sugar industry to check the sugar content in various solutions throughout the refinery.

This special form is designed to determine the refractive index of starch solutions and should prove exceedingly valuable in double-checking the starch content in finishes for textiles and paper.

It occurs to us that it might also find application in the testing of resin finishes; if the starch type would not do this, no doubt the manufacturer could work out a model that would serve this purpose.

The pocket starch refractometer is said to cover a range from 1.3329 to 1.3705 which corresponds to 0-27% starch at 20°C.

Figure 19

Figure 20

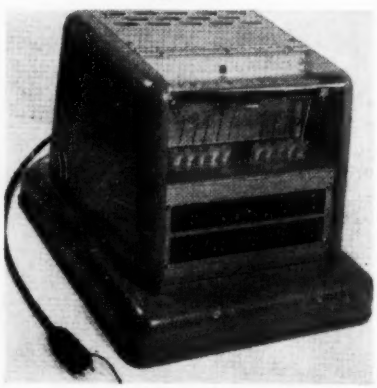

Figure 21

THE WATCHFUL EYE——A stroboscope is an instrument that, while not altogether unknown to the textile printing industry, is yet not as commonly used as it might be.

The word stroboscope comes from the Greek, strobos, whirling, and scopos, watching; so, it watches something whirling.

With the growing use of higher and higher speeds in the textile printing business it is getting harder and harder to check the "fit" or registration of a pattern while the machine is in motion; some form of mechanical gadet is therefore necessary to help the printer in checking this particular part of his work.

Apparently what the stroboscope does is to stop the pattern so that the fit can be checked and suitable adjustments made, either by use of the old-fashioned tommybar point, which is deftly inserted into the small hole in the box gear and a quick turn made to put the roller slightly forward or backward as required, or by pushing a button. The latest types of print machines are provided with push-button adjustment which is at once more effective and less dangerous.

It is said that a rotary printing machine can be run with the aid of stroboscopic light at twice the speed possible without this device. (See Figure 20).

TESTING

FLEX TESTING MACHINE—— A machine is available that tests 10 fibers at once. A counter, which records the number of cycles of each individual fiber, stops when that fiber breaks so that the average number of cycles can be calculated when the entire series of ten fibers are finally broken. This is said to give a fair measure of the resistance to wear of any fabrics woven from the fibers thus tested. (See Figure 21).

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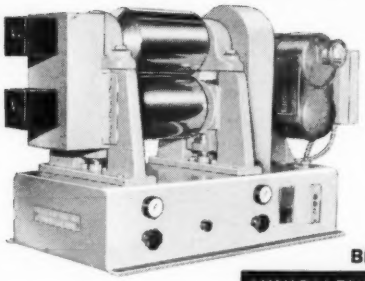

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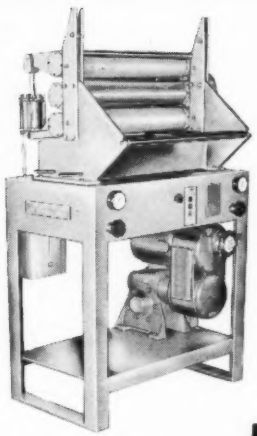

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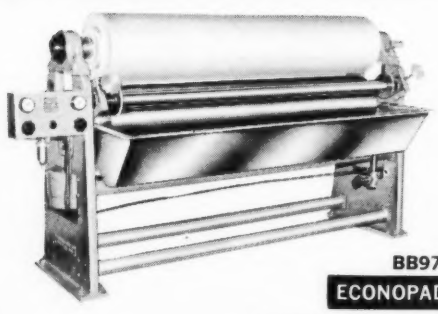

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GARMENT MANUFACTURE

SEWING MACHINE———As many of our readers are connected with the garment-manufacturing business, we take the liberty of making a brief reference to a machine which may be found interesting to such people.

The new and improved type of commercial sewing machine illustrated in Figure 22 has some properties worth mentioning. It is primarily designed to do high-speed straight stitching; in addition it can also be used for elastic zigzag sewing *without vibration:* the variation of the zigzag is controlled by setting a handy lever; the maximum zigzag is six millimeters.

Other special functions performed by this remarkable machine include making keyhole button holes, attaching buttons, blind hemming pintucking, English embroidery and automatic fancy stitches.

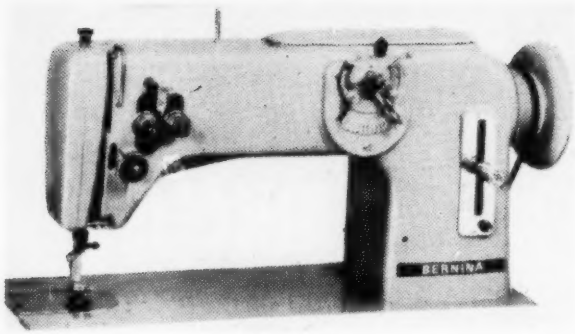

Figure 22

HAND KNITTING

Many of us may remember when we were pressed into service to act as knitting wool skein holders while a female member of the family made the skein, which was the accepted legal tender for knitting yarn, into a ball; in this form, and no other, could it be converted into a knitted stocking, sweater or other article of clothing.

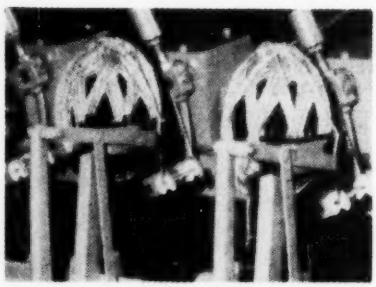

Figure 23

Finally, a machine has been devised to do this work if not entirely automatically, at least semi-automatically. Not that there have not been balling machines in the past, but this one seemes to have some outstanding advantages over them and it is certainly a big improvement over the old-fashioned way of selling knitting yarns in the skein. (See Figures 23-25).

The machine stops when the ball has reached the weight desired and the yarn is clipped off at that point. Donning the skeins and doffing the balls has to be done by hand.

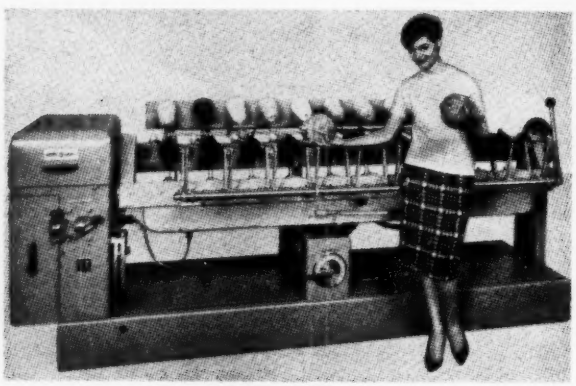

Figure 24

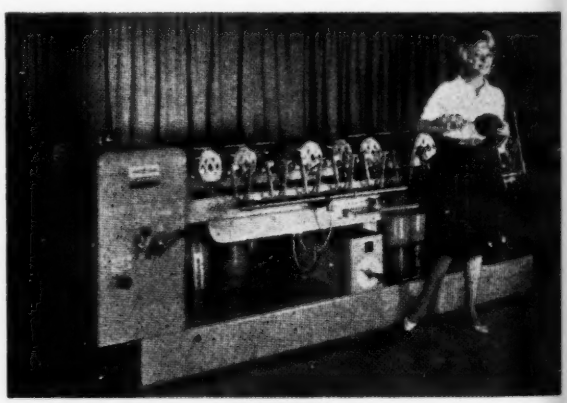

Figure 25

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